



6560-50-P

## **ENVIRONMENTAL PROTECTION AGENCY**

### **40 CFR Part 63**

**[EPA-HQ-OAR-2016-0678; FRL-9988-71-OAR]**

**RIN 2060-AT71**

### **National Emission Standards for Hazardous Air Pollutants: Surface Coating of Wood Building Products Residual Risk and Technology Review**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** This action finalizes the residual risk and technology review (RTR) conducted for the Surface Coating of Wood Building Products source category regulated under national emission standards for hazardous air pollutants (NESHAP). In addition, we are taking final action addressing periods of startup, shutdown, and malfunction (SSM). We are finalizing our proposed determination that the risks are acceptable and that the current NESHAP provides an ample margin of safety to protect public health. We identified no new cost-effective controls under the technology review to achieve further emissions reductions. These final amendments include provisions regarding electronic reporting, adding an alternative compliance equation under the current standards, and technical and editorial changes. This action also finalizes a new EPA test method to measure isocyanate compounds in certain surface coatings. These amendments are being made under the authority of the Clean Air Act (CAA) and will improve the effectiveness of the rule. The amendments are environmentally neutral.

**DATES:** This final rule is effective on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The incorporation by reference of certain publications listed in the

rule is approved by the Director of the Federal Register as of **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

**ADDRESSES:** The Environmental Protection Agency (EPA) has established a docket for this action under Docket ID No. EPA-HQ-OAR-2016-0678. All documents in the docket are listed on the <https://www.regulations.gov> website. Although listed, some information is not publicly available, *e.g.*, confidential business information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through <https://www.regulations.gov>, or in hard copy at the EPA Docket Center, EPA WJC West Building, Room Number 3334, 1301 Constitution Ave., NW, Washington, DC. The Public Reading Room hours of operation are 8:30 a.m. to 4:30 p.m. Eastern Standard Time (EST), Monday through Friday. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Docket Center is (202) 566-1742.

**FOR FURTHER INFORMATION CONTACT:** For questions about this final action, contact Mr. John Bradfield, Sector Policies and Programs Division (E143-03), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 27711; telephone number: (919) 541-3062; fax number: (919) 541-0516; and email address: [bradfield.john@epa.gov](mailto:bradfield.john@epa.gov). For specific information regarding the risk modeling methodology, contact Mr. James Hirtz, Health and Environmental Impacts Division (C539-02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541-0881; fax number: (919) 541-0840; and email address: [hirtz.james@epa.gov](mailto:hirtz.james@epa.gov). For information about the applicability of

the NESHAP to a particular entity, contact Mr. John Cox, Office of Enforcement and Compliance Assurance, U.S. Environmental Protection Agency, EPA WJC South Building, 1200 Pennsylvania Ave., NW, Mail Code 2221A, Washington, DC 20460; telephone number: (202) 564-1395; and email address: [cox.john@epa.gov](mailto:cox.john@epa.gov).

## **SUPPLEMENTARY INFORMATION:**

*Preamble acronyms and abbreviations.* We use multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for reference purposes, the EPA defines the following terms and acronyms here:

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
CAA	Clean Air Act
CDX	Central Data Exchange
CEDRI	Compliance and Emissions Data Reporting Interface
CFR	Code of Federal Regulations
CORE	Central Operations and Resources
CRA	Congressional Review Act
EJ	environmental justice
EO	Executive Order
EPA	Environmental Protection Agency
ERT	Electronic Reporting Tool
EST	Eastern Standard Time
FTIR	Fourier Transform Infrared
HAP	hazardous air pollutant(s)
HDI	hexamethylene-1,6-diisocyanate
HI	hazard index
HQ	hazard quotient
IBR	incorporation by reference
ICR	information collection request
IRIS	Integrated Risk Information System
km	kilometers
MACT	maximum achievable control technology
MDI	methylene diphenyl diisocyanate
MI	methyl isocyanate
MIR	maximum individual risk

NAICS	North American Industry Classification System
NCASI	National Council for Air and Stream Improvement, Inc.
NEI	National Emissions Inventory
NESHAP	National Emission Standards for Hazardous Air Pollutants
No.	number
NRDC	Natural Resources Defense Council
NTTAA	National Technology Transfer and Advancement Act
OAQPS	Office of Air Quality Planning and Standards
OMB	Office of Management and Budget
PDF	portable document format
POM	polycyclic organic matter
PRA	Paperwork Reduction Act
QA	quality assurance
QC	quality control
REL	reference exposure level
RFA	Regulatory Flexibility Act
RIN	Regulatory Information Number
RTR	risk and technology review
SSM	startup, shutdown, and malfunction
TDI	2,4-toluene diisocyanate
TOSHI	target organ-specific hazard index
tpy	tons per year
UMRA	Unfunded Mandates Reform Act
U.S.	United States
U.S.C.	United States Code
UV	ultraviolet
VCS	voluntary consensus standards
WebFIRE	Web Factor Information Retrieval System

*Background information.* On May 16, 2018, the EPA proposed revisions to the Surface Coating of Wood Building Products NESHAP based on our RTR. In this action, we are finalizing decisions and revisions for the rule. We summarize some of the more significant comments we timely received regarding the proposed rule and provide our responses in this preamble. A summary of all other public comments on the proposal and the EPA's responses to those comments are available in *Response to Public Comments on May 16, 2018 Proposal*,

December 2018, Docket ID No. EPA-HQ-OAR-2016-0678. A “track changes” version of the regulatory language that incorporates the changes in this action is available in the docket.

*Organization of this document.* The information in this preamble is organized as follows:

I. General Information

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III. What is included in this final rule?

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- B. What are the final rule amendments based on the technology review for the Surface Coating of Wood Building Products source category?
- C. What are the final rule amendments addressing emissions during periods of startup, shutdown, and malfunction?
- D. What other changes have been made to the NESHAP?
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- D. Alternative Compliance Equation
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I. Technical and Editorial Changes

V. Summary of Cost, Environmental, and Economic Impacts and Additional Analyses Conducted

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- G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments
- H. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks
- I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use
- J. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR Part 51
- K. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- L. Congressional Review Act (CRA)

## I. General Information

### A. Does this action apply to me?

*Regulated entities.* Categories and entities potentially regulated by this action are shown in Table 1 of this preamble.

**Table 1. NESHAP and Industrial Source Categories Affected By This Final Action**

NESHAP and Source Category	NAICS <sup>1</sup> Code
Surface Coating of Wood Building Products	321211, 321212, 321218, 321219, 321911, 321999

<sup>1</sup> North American Industry Classification System.

Table 1 of this preamble is not intended to be exhaustive, but rather to provide a guide for readers regarding entities likely to be affected by the final action for the source category listed. To determine whether your facility is affected, you should examine the applicability criteria in the appropriate NESHAP. If you have any questions regarding the applicability of any aspect of this NESHAP, please contact the appropriate person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section of this preamble.

*B. Where can I get a copy of this document and other related information?*

In addition to being available in the docket, an electronic copy of this final action will also be available on the Internet. Following signature by the EPA Administrator, the EPA will post a copy of this final action at: <https://www.epa.gov/stationary-sources-air-pollution/surface-coating-wood-building-products-national-emission-standard-1>. Following publication in the **Federal Register**, the EPA will post the **Federal Register** version and key technical documents at this same website.

Additional information is available on the RTR website at <https://www.epa.gov/ttn/atw/rrisk/rtrpg.html>. This information includes an overview of the RTR program, links to project websites for the RTR source categories, and detailed emissions and other data we used as inputs to the risk assessments.

*C. Judicial Review and Administrative Reconsideration*

Under CAA section 307(b)(1), judicial review of this final action is available only by filing a petition for review in the United States Court of Appeals for the District of Columbia Circuit (the Court) by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Under CAA section 307(b)(2), the requirements established by this final rule may not be challenged separately in any civil or criminal proceedings brought by the EPA to enforce the requirements.

Section 307(d)(7)(B) of the CAA further provides that only an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment (including any public hearing) may be raised during judicial review. This section also provides a mechanism for the EPA to reconsider the rule if the person raising an objection can demonstrate to the Administrator that it was impracticable to raise such objection within the period for public

comment or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule. Any person seeking to make such a demonstration should submit a Petition for Reconsideration to the Office of the Administrator, U.S. EPA, Room 3000, EPA WJC South Building, 1200 Pennsylvania Ave., NW, Washington, DC 20460, with a copy to both the person(s) listed in the preceding **FOR FURTHER INFORMATION CONTACT** section, and the Associate General Counsel for the Air and Radiation Law Office, Office of General Counsel (Mail Code 2344A), U.S. EPA, 1200 Pennsylvania Ave., NW, Washington, DC 20460.

## **II. Background**

### *A. What is the statutory authority for this action?*

Section 112 of the CAA establishes a two-stage regulatory process to address emissions of hazardous air pollutants (HAP) from stationary sources. In the first stage, we must identify categories of sources emitting one or more of the HAP listed in CAA section 112(b) and then promulgate technology-based NESHAP for those sources. “Major sources” are those that emit, or have the potential to emit, any single HAP at a rate of 10 tons per year (tpy) or more, or 25 tpy or more of any combination of HAP. For major sources, these standards are commonly referred to as maximum achievable control technology (MACT) standards and must reflect the maximum degree of emission reductions of HAP achievable (after considering cost, energy requirements, and non-air quality health and environmental impacts). In developing MACT standards, CAA section 112(d)(2) directs the EPA to consider the application of measures, processes, methods, systems, or techniques, including but not limited to those that reduce the volume of or eliminate HAP emissions through process changes, substitution of materials, or other modifications; enclose systems or processes to eliminate emissions; collect, capture, or treat HAP when released



from a process, stack, storage, or fugitive emissions point; are design, equipment, work practice, or operational standards; or any combination of the above.

For these MACT standards, the statute specifies certain minimum stringency requirements, which are referred to as MACT floor requirements, and which may not be based on cost considerations. See CAA section 112(d)(3). For new sources, the MACT floor cannot be less stringent than the emission control achieved in practice by the best-controlled similar source. The MACT standards for existing sources can be less stringent than floors for new sources, but they cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources in the category or subcategory (or the best-performing five sources for categories or subcategories with fewer than 30 sources). In developing MACT standards, we must also consider control options that are more stringent than the floor under CAA section 112(d)(2). We may establish standards more stringent than the floor, based on the consideration of the cost of achieving the emissions reductions, any non-air quality health and environmental impacts, and energy requirements.

In the second stage of the regulatory process, the CAA requires the EPA to undertake two different analyses, which we refer to as the technology review and the residual risk review. Under the technology review, we must review the technology-based standards and revise them “as necessary (taking into account developments in practices, processes, and control technologies)” no less frequently than every 8 years, pursuant to CAA section 112(d)(6). Under the residual risk review, we must evaluate the risk to public health remaining after application of the technology-based standards and revise the standards, if necessary, to provide an ample margin of safety to protect public health or to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect. The residual risk review is

required within 8 years after promulgation of the technology-based standards, pursuant to CAA section 112(f). In conducting the residual risk review, if the EPA determines that the current standards provide an ample margin of safety to protect public health, it is not necessary to revise the MACT standards pursuant to CAA section 112(f).<sup>1</sup> For more information on the statutory authority for this rule, see 83 FR 2274.

*B. What is the Surface Coating of Wood Building Products source category and how does the NESHAP regulate HAP emissions from the source category?*

The EPA promulgated the Surface Coating of Wood Building Products NESHAP on May 28, 2003 (See 68 FR 31746). The standards are codified at 40 CFR part 63, subpart QQQQ. The Wood Building Products Surface Coating industry consists of facilities that are engaged in the surface coating of wood building products, which means the application of coatings using, for example, roll coaters or curtain coaters in the finishing or laminating of any wood building product that contains more than 50 percent by weight wood or wood fiber, excluding the weight of any glass components, and is used in the construction, either interior or exterior, of a residential, commercial, or institutional building. Regulated operations include all processes and process units incorporating wood building products surface coating operations. The source category covered by this MACT standard currently includes 57 facilities.

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<sup>1</sup> The Court has affirmed this approach of implementing CAA section 112(f)(2)(A): *NRDC v. EPA*, 529 F.3d 1077, 1083 (D.C. Cir. 2008) (“If EPA determines that the existing technology-based standards provide an ‘ample margin of safety,’ then the Agency is free to readopt those standards during the residual risk rulemaking.”).

*C. What changes did we propose for the Surface Coating of Wood Building Products source category in our May 16, 2018, proposal?*

On May 16, 2018, the EPA published a proposed rule in the **Federal Register** for the Surface Coating of Wood Building Products NESHAP, 40 CFR part 63, subpart QQQQ, that took into consideration the RTR analyses. In the proposed rule, we proposed revisions to the SSM provisions of the MACT rule in order to ensure that they are consistent with the Court decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), which vacated two provisions that exempted sources from the requirement to comply with otherwise applicable CAA section 112(d) emission standards during periods of SSM. We also proposed various other changes, including an alternative compliance calculation, electronic submittal of notifications, compliance reports, and performance test reports, a new EPA test method, IBR of several test methods, and various technical and editorial changes. Additionally, we requested comment on repeat emissions testing requirements for facilities that demonstrate compliance with the standards using add-on control devices and for any facilities using the alternative compliance equation under the emission rate without add-on controls option.

### **III. What is included in this final rule?**

This action finalizes the EPA's determinations pursuant to the RTR provisions of CAA section 112 for the Surface Coating of Wood Building Products source category. This action also finalizes other changes to the NESHAP, including an alternative compliance calculation equation that relies on periodic emissions testing; electronic submittal of notifications of compliance status, semiannual compliance reports, and performance test reports; a new EPA test method for isocyanates, EPA Method 326; IBR of several test methods (listed in section IV below); and various technical and editorial changes.

*A. What are the final rule amendments based on the risk review for the Surface Coating of Wood Building Products source category?*

The EPA proposed no changes to the 40 CFR part 63, subpart QQQQ NESHAP based on the risk review conducted pursuant to CAA section 112(f). We are finalizing our proposed determination that risks from the source category are acceptable, considering all of the health information and factors evaluated, and also considering risk estimation uncertainty. We are also finalizing our proposed determination that revisions to the current standards are not necessary to reduce risk to an acceptable level, to provide an ample margin of safety to protect public health, or to prevent an adverse environmental effect. The EPA received no new data or other information during the public comment period that affected our determinations. Therefore, we are not requiring additional controls and, thus, are not making any revisions to the existing standards under CAA section 112(f).

*B. What are the final rule amendments based on the technology review for the Surface Coating of Wood Building Products source category?*

We determined that there are no developments in practices, processes, and control technologies that warrant revisions to the MACT standards for this source category. The EPA received no new data or other information during the public comment period that affected our determinations. Therefore, we are not finalizing revisions to the MACT standards under CAA section 112(d)(6).

*C. What are the final rule amendments addressing emissions during periods of startup, shutdown, and malfunction?*

In its 2008 decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), the Court vacated portions of two provisions in the EPA's CAA section 112 "General Provisions"

regulations governing the emissions of HAP during periods of SSM. Specifically, the Court vacated the SSM exemption contained in 40 CFR 63.6(f)(1) and 40 CFR 63.6(h)(1), holding that under section 302(k) of the CAA, emissions standards or limitations must be continuous in nature and that the SSM exemption violates the CAA's requirement that some CAA section 112 standards apply continuously.

We have eliminated the SSM exemption in this rule. Consistent with *Sierra Club v. EPA*, the EPA has established standards in this rule that apply at all times. We have also revised Table 4 to Subpart QQQQ of Part 63 (the General Provisions applicability table) in several respects, as is explained in more detail below in section IV.C. For example, we have eliminated the incorporation of the General Provisions' requirement that the source develop an SSM plan. We have also eliminated and revised certain recordkeeping and reporting that is related to the SSM exemption as described in detail in the proposal and summarized below in section IV.C.

*D. What other changes have been made to the NESHAP?*

Other changes to the NESHAP that do not fall into the categories in the previous section include:

1. *Alternative compliance equation.* As proposed in response to a request for an alternative method of demonstrating compliance, we have amended the rule to add an alternative equation within the requirements for facilities meeting the "emission rate without add-on controls" compliance option under the current standards. The alternative is discussed further in section IV.D of this preamble.
2. *Emissions testing.* In response to comments and emissions tests discussed at proposal, we have amended the allowable compliance tests in the rule. Emissions testing is discussed further in section IV.E of this preamble.

3. *Electronic reporting.* As discussed at proposal, we are finalizing amendments to the reporting requirements in the rule to require electronic reporting for notifications of compliance status, compliance test reports, and semiannual reports. Electronic reporting is discussed further in section IV.F of this preamble.
4. *EPA Test Method 326.* As discussed at proposal, we are finalizing a new test method for isocyanate emissions. EPA Test Method 326 is discussed further in section IV.G and is included in appendix A to part 63 of this preamble.
5. *IBR under 1 CFR part 51.* We are incorporating several test methods by reference, as discussed further in section IV.H of this preamble.
6. *Technical and editorial changes.* We are finalizing technical and editorial changes, as discussed further in section IV.I of this preamble.

*E. What are the effective and compliance dates of the standards?*

The revisions to the MACT standards being promulgated in this action are effective on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The compliance date for existing affected sources to comply with the revised requirements is no later than 180 days after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Affected sources that commenced construction or reconstruction after May 16, 2018, are new sources. New sources must comply with all of the standards immediately upon the effective date of the standard, **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, or upon startup, whichever is later. In section IV.F of this preamble on Electronic Reporting, we discuss a semiannual reporting template that will become the required form for those reports 1 year after it is posted in the EPA's Compliance and Emissions Data Reporting Interface (CEDRI). The EPA expects to post the form on **[INSERT DATE OF PUBLICATION IN THE**

**FEDERAL REGISTER]**. Consequently, 1 year or more after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, facilities subject to this standard will need to begin using this form for semiannual reports.

The EPA is finalizing that existing affected sources must comply with the amendments in this rulemaking no later than 180 days after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The EPA is also finalizing that affected sources that commence construction or reconstruction after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]** must comply with all requirements of the subpart, including the amendments being finalized, no later than **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]** or upon startup, whichever is later. All affected existing facilities would have to continue to meet the current requirements of 40 CFR part 63, subpart QQQQ, until the applicable compliance date of the amended rule. The final action is not a “major rule” as defined by 5 U.S.C. 804(2), so the effective date of the final rule is the promulgation date as specified in CAA sections 112(d)(10) and 112(f)(3). For existing sources, we are finalizing two changes that would impact ongoing compliance requirements for 40 CFR part 63, subpart QQQQ. As discussed elsewhere in this preamble, we are adding a requirement that the notification of compliance status, performance test results, and the semiannual reports using the new template be submitted electronically. We are also changing the requirements for SSM by removing the exemption from the requirements to meet the standard during SSM periods and by removing the requirement to develop and implement an SSM plan. Additionally, we are adding an optional new compliance demonstration equation that adds flexibility for meeting the standard, but this change does not affect ongoing compliance. Our experience with similar industries that are required to convert reporting mechanisms, install necessary hardware and

software, become familiar with the process of submitting performance test results electronically through the EPA's CEDRI, test these new electronic submission capabilities, reliably employ electronic reporting, and convert logistics of reporting processes to different time-reporting parameters, shows that a time period of a minimum of 90 days, and more typically, 180 days, is generally necessary to successfully complete these changes. Our experience with similar industries further shows that this sort of regulated facility generally requires a time period of 180 days to read and understand the amended rule requirements; evaluate their operations to ensure that they can meet the standards during periods of startup and shutdown as defined in the rule and make any necessary adjustments; adjust parameter monitoring and recording systems to accommodate revisions; and update their operations to reflect the revised requirements. The EPA recognizes the confusion that multiple different compliance dates for individual requirements would create and the additional burden such an assortment of dates would impose. From our assessment of the timeframe needed for compliance with the entirety of the revised requirements, the EPA considers a period of 180 days to be the most expeditious compliance period practicable, and, thus, is finalizing that existing affected sources be in compliance with all of this regulation's revised requirements within 180 days of the regulation's effective date.

#### **IV. What is the rationale for our final decisions and amendments for the Surface Coating of Wood Building Products source category?**

For each issue, this section provides a description of what we proposed and what we are finalizing for the issue, the EPA's rationale for the final decisions and amendments, and a summary of key comments and responses. For all comments not discussed in this preamble, comment summaries and the EPA's responses can be found in the comment summary and response document available in the docket, Docket ID No. EPA-HQ-OAR-2016-0678.



*A. Residual Risk Review for the Surface Coating of Wood Building Products Source Category*

1. What did we propose pursuant to CAA section 112(f) for the Surface Coating of Wood Building Products source category?

For the 40 CFR part 63, subpart QQQQ category risk assessment conducted at proposal, the EPA estimated risks based on actual and allowable emissions from wood building products surface coating sources. Allowable emissions at proposal were estimated to be equal to actual emissions. The estimated inhalation cancer risk to the individual most exposed to emissions from the source category was 6-in-1 million at proposal, at one facility. The assessment showed that approximately 800 people faced an increased cancer risk greater than 1-in-1 million due to inhalation exposure to HAP emissions from this source category. The risk analysis at proposal indicated very low cancer incidence (0.0006 excess cancer cases per year, or one excess case every 1,667 years), as well as low potential for adverse chronic noncancer health effects with a hazard index (HI) of 0.05 for both actual and allowable emissions. The acute screening assessment indicated two facilities with a maximum hazard quotient (HQ) equal to 1 based upon a reference exposure level (REL) for formaldehyde. Therefore, we found there was little potential concern for chronic or acute noncancer health impacts. The multipathway risk assessment indicated no significant potential for exposure from persistent bio-accumulative HAP (PB-HAP) emissions from the source category.

Considering all of the health risk information, the EPA proposed that the risks from the Surface Coating of Wood Building Products source category were acceptable. Although we proposed acceptable risk, risk estimates for approximately 800 people in the exposed population were above 1-in-1 million, caused by formaldehyde emissions from one facility. The maximum acute risk at proposal was an HQ of 1, also associated with formaldehyde from the same facility

with the highest chronic risk. As a result, we further considered whether the MACT standards for this source category provide an ample margin of safety to protect public health. Our technology review did not identify any new practices, controls, or process options that were being used in this industry, or in other industries, that would be cost effective and result in further reduction of formaldehyde emissions. Because no new controls, technologies, processes, or work practices were identified to reduce formaldehyde emissions and the risk assessment determined that the health risks associated with HAP emissions remaining after implementation of the Surface Coating of Wood Building Products MACT were acceptable, we proposed that the current standards protect public health with an ample margin of safety.

2. How did the risk review change for the Surface Coating of Wood Building Products source category?

In response to comments on the proposed 40 CFR part 63, subpart QQQQ, RTR, we reviewed our facility list and made adjustments, adding five facilities and removing four facilities. The five facilities added had responded to a separate EPA survey, indicating that 40 CFR part 63, subpart QQQQ applied to their facilities. The HAP emissions inventory for the source category was revised to reflect these changes to the facility list. Further, we found that 40 CFR part 63, subpart QQQQ did not apply to four facilities. As such, we removed these four facilities from the facility list. In response to comments received, we also reviewed our HAP data and added polycyclic organic matter (POM) to the HAP emission inventory for the source category. At proposal, we set allowable HAP emissions as being equal to actual HAP emissions due to the nature of compliance choices made by facilities in the category. In response to comments, we reviewed this approach and decided to estimate allowable emissions using a 1.6 multiple of actual emissions. The multiplier was derived from source category capacity usage

information in the U.S. Census of Manufacturers. In response to comments, we also decided to use the more conservative multiplier of 10 times actual emissions to model acute health impacts. See the *Addendum to Preparation of the Residual Risk Modeling Input File for Subpart QQQQ*, in the docket for this rule, EPA-HQ-OAR-2016-0678, for more details regarding these changes. In response to comments received, we also considered whether a refined risk modeling analysis would better inform the EPA about the impact on disadvantaged communities from HAP emissions from the source category. The changes in the facility list, HAP inventory, allowable and acute emission estimates, and environmental justice (EJ) concerns led the EPA to prepare and run a new modeling file and prepare a revised risk assessment, *Residual Risk Assessment for the Surface Coating of Wood Building Products Source Category in Support of the 2018 Risk and Technology Review Final Rule*, which is available in the docket for the rule.

The revised risk assessment for the source category indicated that human health impacts for both chronic and acute risks were lower than stated at proposal. The results of the risk assessment showed that risks based on actual emissions did not exceed a maximum individual risk (MIR) of 1-in-1 million for cancer and resulted in an HI of 0.02 for noncancer. The results of the final risk assessment also showed lower risks based upon allowable emissions with a cancer MIR of 1-in-1 million and a noncancer HI of 0.03. The revised risk assessment also showed lower acute risks than stated at proposal with a maximum acute noncancer HQ of 0.6.

Table 2 of this preamble provides an overall summary of the results of the inhalation risk assessment, as discussed in this section of this preamble. See the *Addendum to Preparation of the Residual Risk Modeling Input File for Subpart QQQQ*, in the docket for this rule, Docket ID No. EPA-HQ-OAR-2016-0678, for more details regarding preparation of the modeling file.

**Table 2. Surface Coating of Wood Building Products Inhalation Risk Assessment Results<sup>1</sup>**

<b>Risk Assessment</b>	<b>Number of Facilities<sup>2</sup></b>	<b>Maximum Individual Cancer Risk (in 1 million)<sup>3</sup></b>	<b>Estimated Population at Increased Risk of Cancer ≥ 1-in-1 Million</b>	<b>Estimated Annual Cancer Incidence (cases per year)</b>	<b>Maximum Chronic Noncancer TOSHI<sup>4</sup></b>	<b>Maximum Screening Acute Noncancer HQ<sup>5</sup></b>
Baseline Actual Emissions						
Source Category	50	<1	0	0.0004	0.02	0.6
Baseline Allowable Emissions						
Source Category	50	1	700	0.0007	0.03	-

<sup>1</sup> Based on actual and allowable emissions for facilities subject to 40 CFR part 63, subpart QQQQ. See *Residual Risk Assessment for the Surface Coating of Wood Building Products Source Category in Support of the 2018 Risk and Technology Review Final Rule*, in the docket for this rule, EPA–HQ–OAR–2016–0678, for more details.

<sup>2</sup> Number of facilities evaluated in the risk assessment. Seven facilities in the category reported no HAP emissions from coatings subject to 40 CFR part 63, subpart QQQQ. Facilities that did not emit any HAP subject to 40 CFR part 63, subpart QQQQ were only modeled for whole-facility HAP emissions. Two facilities in the source category reported zero HAP emissions facility-wide and were not modeled.

<sup>3</sup> Maximum individual excess lifetime cancer risk due to HAP emissions from the source category facilities. The risk driver for the source category is naphthalene.

<sup>4</sup> Maximum target organ-specific hazard index (TOSHI). The target organ with the highest TOSHI for the source category is the respiratory system. The risk drivers for the source category are triethylamine and naphthalene.

<sup>5</sup> The maximum estimated acute exposure concentration was divided by available short-term threshold values to develop an array of HQ values. HQ values shown use the lowest available acute threshold value, which, in most cases, is the REL. When an HQ exceeds 1 in the acute risk screening assessment, we conduct further analysis to determine the highest off-site impact. The maximum acute noncancer risk driver is formaldehyde.

The inhalation risk modeling performed to estimate risks based on actual and allowable emissions relied primarily on emissions data from the National Emissions Inventory (NEI). The results of the inhalation cancer risk assessment, as shown in Table 2 of this preamble, indicate that the MIR could be up to 1-in-1 million for allowable emissions under the current standard, with naphthalene emissions from solvent evaporation associated with spray paint operations as the major contributor to the MIR. The total estimated cancer incidence from wood building product coating sources based on actual emission levels is 0.0004 excess cancer cases per year or

one case every 2,500 years, with emissions of naphthalene and ethylbenzene contributing to the cancer incidence. In addition, we estimate that approximately 700 people have cancer risks at 1-in-1 million based on allowable emissions.

The maximum modeled chronic noncancer HI (TOSHI) value for the source category based on actual emissions is estimated to be 0.02, with emissions of triethylamine and naphthalene contributing to the TOSHI. The target organ affected is the respiratory system. No people are estimated to have a noncancer HI above 1 as a result of emissions from this source category.

### 3. What key comments did we receive on the risk review, and what are our responses?

We received two comments on our proposed risk assessment. One stakeholder supported our risk assessment proposal and further suggested that the Integrated Risk Information System (IRIS) dose response factors for formaldehyde, the principle risk driver in the category, were overly conservative and should be re-evaluated. Another stakeholder disagreed with our assessment, characterizing it as arbitrary because (1) it exceeded the 1-in-1 million CAA presumption of acceptability from CAA section 112(f)(2), and (2) the health impacts of the risk above 1-in-1 million were concentrated in minority and lower income neighborhoods, and, thus, creating what the commenter considered an environmental justice issue.

As stated in our response to comments,<sup>2</sup> we found the risk from HAP exposure from emission sources in this category to be acceptable. The cancer dose-response value used in the risk assessment for formaldehyde is the current peer reviewed IRIS value. The chronic noncancer dose-response value used for formaldehyde is from the Agency for Toxic Substances and

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<sup>2</sup> See *Response to Public Comments on May 16, 2018 Proposal, December 2018*, Docket ID No. EPA-HQ-OAR-2016-0678.

Disease Registry (ATSDR). At the time this analysis was performed, these values were deemed to represent the best science.

Regarding the comments to risk on disadvantaged communities, under Executive Order 12898, the EPA is directed to the greatest extent practicable and permitted by law, to make EJ part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations in the U.S. Consistent with Executive Order 12898 and the Presidential Memorandum<sup>3</sup> that accompanies it, the EPA's EJ policies promote justice by focusing attention and EPA efforts on addressing the types of EJ harms and risks that are prevalent among minority, low-income, and indigenous populations. Executive Order 12898 and the EPA's EJ policies do not mandate particular outcomes from an action, but they require that decisions involving the action be informed by a consideration of EJ issues. With respect to this rule, the EPA found that the original NESHAP meets the CAA section 112(f)(2) standard for providing an ample margin of safety for all populations in close proximity to these sources, including minority and low-income populations.

#### 4. What is the rationale for our final approach and final decisions for the risk review?

As noted in our proposal, the EPA sets standards under CAA section 112(f)(2) using “a two-step standard-setting approach, with an analytical first step to determine an ‘acceptable risk’ that considers all health information, including risk estimation uncertainty, and includes a presumptive limit on MIR of “approximately 1-in-10 thousand” (see 54 FR 38045, September 14, 1989). We weigh all health risk factors in our risk acceptability determination, including the

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<sup>3</sup>Memorandum for the Heads of All Departments and Agencies from William Clinton, February 11, 1994. *Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.

cancer MIR, cancer incidence, the maximum cancer TOSHI, the maximum acute noncancer HQ, the extent of noncancer risks, the distribution of cancer and noncancer risks in the exposed population, and the risk estimation uncertainties.

Our final risk assessment was revised based on comments we received at proposal. It included updated facility information, HAP emissions, and production information (see section IV.A.2 of this preamble). The total emissions of HAP for the source category are approximately 270 tpy. The results of the chronic inhalation cancer risk assessment based on actual emissions, the total estimated cancer incidence from allowable emissions in this source category, and the acute HQ are discussed in section IV.A.2 and in Table 2 of this preamble. In evaluating the potential for multipathway effects from PB-HAP, including carcinogenic emissions of arsenic and POM and non-carcinogenic emissions of cadmium, lead, and mercury from the source category, the risk assessment indicates no significant potential for multipathway effects.

We concluded, based on all the health risk information and factors discussed at proposal, that the risks from the Surface Coating of Wood Building Products source category were acceptable. As noted above, the information in the final risk assessment shows lower risk indicators than indicated at proposal. Consequently, the EPA is finalizing an acceptable risk determination for the category. We conducted an analysis to determine if the current emissions standards provide an ample margin of safety to protect public health. Under the ample margin of safety analysis,<sup>4</sup> the EPA considers all health factors evaluated in the risk assessment and evaluates the cost and feasibility of available control technologies and other measures (including the controls, measures, and costs reviewed under the technology review) that could be applied to this source category to further reduce the risks (or potential risks) due to emissions of HAP

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<sup>4</sup> See CAA section 112(f)(2).

identified in our risk assessment. In this analysis, we considered the results of the technology review, risk assessment, and other aspects of our MACT rule review to determine whether there are any cost-effective controls or other measures that would reduce emissions further to provide an ample margin of safety with respect to the risks associated with these emissions.

As noted, we consider the risks from this source category to be acceptable. However, risk estimates for approximately 700 people in the exposed population are at 1-in-1 million, based on allowable naphthalene emissions from one facility. As a result, we further considered whether the MACT standards for this source category provide an ample margin of safety to protect public health.

At proposal, our ample margin of safety review was informed by the results of our technology review which did not identify any developments in practices, controls, or process options that are being used in this industry, or in other industries, that would be cost effective and result in further emissions reductions. Similarly, our review of the operating permits for major sources subject to the Surface Coating of Wood Building Products MACT did not reveal any facilities with limits set below the current new or existing source limits (Tables 1 and 2 to Subpart QQQQ of Part 63). Limits set below the current standards would have been an indication that improved controls or lower emission-compliant coatings were available. Additionally, our review of the Reasonably Available Control Technology/Best Available Control Technology/Lowest Achievable Emission Rate Clearinghouse identified three sources that are potentially covered under 40 CFR part 63, subpart QQQQ, but none contained new control methods. Because no developments in controls, technologies, processes, or work practices were identified to reduce naphthalene emissions and the risk assessment determined that the health risks associated with HAP emissions remaining after implementation of the Surface Coating of



Wood Building Products MACT were acceptable, we are finalizing our risk review determination that the current standards protect public health with an ample margin of safety.

*B. Technology Review for the Surface Coating of Wood Building Products Source Category*

1. What did we propose pursuant to CAA section 112(d)(6) for the Surface Coating of Wood Building Products source category?

Our review of the developments in technology for the Surface Coating of Wood Building Products source category did not reveal any changes in practices, processes, and controls. In the original NESHAP, we noted that the most prevalent form of emission control for surface coating of wood building products is the use of low-volatile organic compounds and low-HAP coatings, such as waterborne or ultraviolet (UV)-cured coatings. That continues to be the prevalent compliance approach, with less than 10 percent of source category facilities using add-on control to reduce HAP emissions. Because our review did not identify any developments in practices, processes, or controls to further reduce emissions in the category beyond the level required by the current NESHAP, we proposed that no revisions to the NESHAP are necessary pursuant to CAA section 112(d)(6).

2. How did the technology review change for the Surface Coating of Wood Building Products source category?

The technology review did not change from proposal. Therefore, we are finalizing our proposed determination that no revisions to the NESHAP are necessary pursuant to CAA section 112(d)(6).

3. What key comments did we receive on the technology review, and what are our responses?

We received no comments that identified improved control technology, work practices, operational procedures, process changes, or pollution prevention approaches to reduce emissions

in the category since promulgation of the current NESHAP. We received two comments on our proposed technology review. One stakeholder supported our review, while another stakeholder disagreed with our assessment, holding that the new coating application which led to the proposal of an alternative compliance equation constituted a change that should have been adopted across the category (see Docket ID No. EPA-HQ-OAR-2016-0678).

As stated in our comment response (see Docket ID No. EPA-HQ-OAR-2016-0678), we are finalizing the conclusion that there have been no advances in practices, processes, or controls since promulgation in 2003 that justify changes to the stringency of the standards for 40 CFR part 63, subpart QQQQ sources.

At proposal, we explained how the coating planned for use by the facility submitting the alternative monitoring request is similar to other low-HAP coatings in that it uses a liquid catalyst to affect the same type of chemical and physical changes as UV light in the UV-curable coatings, which are low-HAP coatings that predate and were considered during development of the original 40 CFR part 63, subpart QQQQ NESHAP. Regardless of this explanation, we see how the commenter may have misconstrued some of the discussion in the proposal's supporting memorandum regarding the coating technology and the new compliance equation. The updated memorandum, *Technology Review for the Surface Coating of Wood Building Products Source Category – Final Rule*, available in the docket for this rule, EPA-HQ-OAR-2016-0678, clarifies the information used for the technology review. The technology basis of the coating technology for which the new compliance equation we finalize here is not broadly applicable. It is simply one of many technology approaches that can be used to meet the standard. Consequently, we did not propose the alternate compliance equation as a “development” under CAA section 112(d)(6), nor are we finalizing it as such. Even if the EPA were to consider the

new coating to be a development within the meaning of CAA section 112(d)(6), the EPA has discretion to determine when it is “necessary” to revise emission standards under the statute. In this case, it would not be necessary to revise the numeric emission standards in Tables 1 or 2 to Subpart QQQQ of Part 63, in order to accommodate the alternative monitoring request from one facility that fits within the overarching compliance options included in the rule (*i.e.*, the “emission rate without add-on controls” option).

#### 4. What is the rationale for our final approach for the technology review?

Our technology review did not identify any changes in practices, processes, or control technologies that would reduce emissions in this category. We did not identify any control equipment not previously identified; improvements to existing controls; work practices, process changes, or operational procedures not previously considered; or any new pollution prevention alternatives for this same category. We also did not find any changes in the cost of applying controls previously considered in this same category. Consequently, we have determined that no revisions to the NESHAP are necessary pursuant to CAA section 112(d)(6).

#### C. SSM

In its 2008 decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), the Court vacated portions of two provisions in the EPA’s CAA section 112 General Provisions regulations governing the emissions of HAP during periods of SSM. Specifically, the Court vacated the SSM exemption contained in 40 CFR 63.6(f)(1) and 40 CFR 63.6(h)(1), holding that under section 302(k) of the CAA, emissions standards or limitations must be continuous in nature and that the SSM exemption violates the CAA’s requirement that some CAA section 112 standards apply continuously.

We are finalizing the elimination of the SSM exemption in this rule. The SSM provisions appear at 40 CFR 63.4700, 40 CFR 63.4720, and in Table 4 to Subpart QQQQ of Part 63.

Consistent with *Sierra Club v. EPA*, we are finalizing that the standards in this rule apply at all times. We are also finalizing several revisions to Table 4 (the General Provisions Applicability Table), as explained in more detail below. For example, we are eliminating incorporation of the General Provisions' requirement that the source develop an SSM plan. We also are eliminating and revising certain recordkeeping and reporting requirements related to the SSM exemption, as further described below.

The EPA has attempted to ensure that the provisions we are eliminating are inappropriate, unnecessary, or redundant in the absence of the SSM exemption. The EPA believes the removal of the SSM exemption creates no additional burden to facilities regulated under the Surface Coating of Wood Building Products NESHAP. Deviations addressed in current SSM plans are now required to be reported in the semiannual compliance report (40 CFR 63.4720). Facilities no longer need to develop an SSM plan or keep it current (Table 4 to Subpart QQQQ of Part 63). Facilities also no longer have to file SSM reports for deviations not described in the their SSM plan (40 CFR 63.4720(c)(2)).

*Periods of startup and shutdown.* In finalizing the standards in this rule, the EPA has taken into account startup and shutdown periods and, for the reasons explained below, is not finalizing alternate standards for those periods.

For add-on control systems, the Surface Coating of Wood Building Products NESHAP requires the measurement of thermal oxidizer operating temperature or catalytic oxidizer average temperature across the catalyst bed as well as other types of parameter monitoring. Parameter limits now apply at all times, including during periods of startup and shutdown. The Surface

Coating of Wood Building Products NESHAP requires thermal oxidizer or catalytic oxidizer operating temperature and operating parameters for other add-on control devices to be recorded at least once every 15 minutes. The Surface Coating of Wood Building Products NESHAP specifies in 40 CFR 63.4763(c) that if an operating parameter is out of the allowed range, this is a deviation from the operating limit and must be reported as specified in 40 CFR 63.4710(c)(6) and 63.4720(a)(7).

Our permit review of the facilities using add-on control as a compliance approach indicated that all were required, by permit, to have their control system in operation during all time periods when coating processes were operational. The 2003 rule requires compliance based on a 12-month rolling average emissions calculation. Periods of startup and shutdown were included, but, because of operational requirements in the category, are a very small component of the emissions calculation and have little, if any, impact on the 12-month rolling average. Therefore, we are not finalizing separate standards for startup and/or shutdown periods.

*Periods of malfunction.* Periods of startup, normal operations, and shutdown are all predictable and routine aspects of a source's operations. Malfunctions, in contrast, are neither predictable nor routine. Instead, they are, by definition, sudden, infrequent, and not reasonably preventable failures of emissions control, process, or monitoring equipment. (40 CFR 63.2, definition of malfunction). The EPA interprets CAA section 112 as not requiring emissions that occur during periods of malfunction to be factored into development of CAA section 112 standards and this reading has been upheld as reasonable by the Court in *U.S. Sugar Corp. v. EPA*, 830 F.3d 579, 606-610 (2016). Under CAA section 112, emissions standards for new sources must be no less stringent than the level "achieved" by the best controlled similar source and for existing sources generally must be no less stringent than the average emission limitation

“achieved” by the best performing 12 percent of sources in the category. There is nothing in CAA section 112 that directs the Agency to consider malfunctions in determining the level “achieved” by the best performing sources when setting emission standards. As the Court has recognized, the phrase “average emissions limitation achieved by the best performing 12 percent of” sources “says nothing about how the performance of the best units is to be calculated.”

*National Association of Clean Water Agencies v. EPA*, 734 F.3d 1115, 1141 (D.C. Cir. 2013).

While the EPA accounts for variability in setting emissions standards, nothing in CAA section 112 requires the Agency to consider malfunctions as part of that analysis. The EPA is not required to treat a malfunction in the same manner as the type of variation in performance that occurs during routine operations of a source. A malfunction is a failure of the source to perform in “normal or usual manner,” and no statutory language compels the EPA to consider such events in setting CAA section 112 standards.

As the Court recognized in *U.S. Sugar Corporation*, accounting for malfunctions in setting standards would be difficult, if not impossible, given the myriad different types of malfunctions that can occur across all sources in the category and given the difficulties associated with predicting or accounting for the frequency, degree, and duration of various malfunctions that might occur. *Id.* at 608 (“the EPA would have to conceive of a standard that could apply equally to the wide range of possible boiler malfunctions, ranging from an explosion to minor mechanical defects. Any possible standard is likely to be hopelessly generic to govern such a wide array of circumstances.”). As such, the performance of units that are malfunctioning is not “reasonably” foreseeable. See, e.g., *Sierra Club v. EPA*, 167 F.3d 658, 662 (D.C. Cir. 1999) (“The EPA typically has wide latitude in determining the extent of data-gathering necessary to solve a problem. We generally defer to an agency’s decision to proceed on the basis

of imperfect scientific information, rather than to ‘invest the resources to conduct the perfect study.’”). See also, *Weyerhaeuser v. Costle*, 590 F.2d 1011, 1058 (D.C. Cir. 1978) (“In the nature of things, no general limit, individual permit, or even any upset provision can anticipate all upset situations. After a certain point, the transgression of regulatory limits caused by ‘uncontrollable acts of third parties,’ such as strikes, sabotage, operator intoxication or insanity, and a variety of other eventualities, must be a matter for the administrative exercise of case-by-case enforcement discretion, not for specification in advance by regulation.”). In addition, emissions during a malfunction event can be significantly higher than emissions at any other time of source operation. For example, if an air pollution control device with 99-percent removal goes off-line as a result of a malfunction (as might happen if, for example, the bags in a baghouse catch fire) and the emission unit is a steady state type unit that would take days to shut down, the source would go from 99-percent control to zero control until the control device was repaired. The source’s emissions during the malfunction would be 100 times higher than during normal operations. As such, the emissions over a 4-day malfunction period would exceed the annual emissions of the source during normal operations. As this example illustrates, accounting for malfunctions could lead to standards that are not reflective of (and significantly less stringent than) levels that are achieved by a well-performing non-malfunctioning source. It is reasonable to interpret CAA section 112 to avoid such a result. The EPA’s approach to malfunctions is consistent with CAA section 112 and is a reasonable interpretation of the statute.

Although no statutory language compels the EPA to set standards for malfunctions, the EPA has the discretion to do so where feasible. For example, in the Petroleum Refinery Sector RTR, the EPA established a work practice standard for unique types of malfunction that result in releases from pressure relief devices or emergency flaring events because information regarding

petroleum refinery sources was available to determine that such work practices reflected the level of control that applies to the best performing sources in that source category. See 80 FR 75178, 75211-75214 (December 1, 2015). The EPA considered whether circumstances warrant setting work practice standards for a particular type of malfunction and, if so, whether the EPA has sufficient information to identify the relevant best performing sources and establish a standard for such malfunctions.

In the event that a source fails to comply with the applicable CAA section 112 standards as a result of a malfunction event, the EPA would determine an appropriate response based on, among other things, the good faith efforts of the source to minimize emissions during malfunction periods, including preventative and corrective actions, as well as root cause analyses to ascertain and rectify excess emissions. The EPA would also consider whether the source's failure to comply with the CAA section 112 standard was, in fact, sudden, infrequent, not reasonably preventable, and was not instead caused, in part, by poor maintenance or careless operation. 40 CFR 63.2 (definition of malfunction).

If the EPA determines in a particular case that an enforcement action against a source for violation of an emission standard is warranted, the source can raise any and all defenses in that enforcement action and the federal district court will determine what, if any, relief is appropriate. The same is true for citizen enforcement actions. Similarly, the presiding officer in an administrative proceeding can consider any defense raised and determine whether administrative penalties are appropriate.

In summary, the EPA's interpretation of the CAA and, in particular, CAA section 112 is reasonable and encourages practices that will avoid malfunctions. Administrative and judicial procedures for addressing exceedances of the standards fully recognize that violations may occur



despite good faith efforts to comply and can accommodate those situations. *U.S. Sugar Corporation v. EPA*, 830 F.3d 579, 606-610 (2016).

## 1. General Duty

We are finalizing revisions to the General Provisions table (Table 4) entry for 40 CFR 63.6(e)(1) and (2) by redesignating it as 40 CFR 63.6(e)(1)(i) and changing the “yes” in column 3 to a “no.” Section 63.6(e)(1)(i) describes the general duty to minimize emissions. Some of the language in that section is no longer necessary or appropriate considering the elimination of the SSM exemption. We are instead adding general duty regulatory text at 40 CFR 63.4700(b) that reflects the general duty to minimize emissions while eliminating the reference to periods covered by an SSM exemption. The previous language in 40 CFR 63.6(e)(1)(i) characterized what the general duty entails during periods of SSM. With the elimination of the SSM exemption, there is no need to differentiate between normal operations and SSM events in describing the general duty. Therefore, the language the EPA is finalizing for 40 CFR 63.4700(b) does not include that language from 40 CFR 63.6(e)(1).

We are also revising the General Provisions table (Table 4) to add an entry for 40 CFR 63.6(e)(1)(ii) and include a “no” in column 3. Section 63.6(e)(1)(ii) imposes requirements that are not necessary with the elimination of the SSM exemption or are redundant with the general duty requirement being added at 40 CFR 63.4700(b). We are also finalizing revisions to the General Provisions table (Table 4) to add an entry for 40 CFR 63.6(e)(1)(iii) and include a “yes” in column 3, which became necessary with the elimination of the SSM. Finally, we are finalizing revisions to the General Provisions table (Table 4) to add an entry for 40 CFR 63.6(e)(2) and include a “no” in column 3. This paragraph is reserved and is not applicable to 40 CFR part 63, subpart QQQQ.

## 2. SSM Plan

We are finalizing revisions to the General Provisions table (Table 4) to add an entry for 40 CFR 63.6(e)(3) and include a “no” in column 3. Generally, these paragraphs require development of an SSM plan and specify SSM recordkeeping and reporting requirements related to the SSM plan. As noted, the EPA is finalizing removal of the SSM exemptions. Therefore, affected units will be subject to an emission standard during such events. The applicability of a standard during such events will ensure that sources have ample incentive to plan for and achieve compliance, and, thus, the SSM plan requirements are no longer necessary.

## 3. Compliance with Standards

We are finalizing revisions to the General Provisions table (Table 4) entries for 40 CFR 63.6(f) by redesignating this section as 40 CFR 63.6(f)(1) and including a “no” in column 3. The previous language in 40 CFR 63.6(f)(1) excluded sources from non-opacity standards during periods of SSM, while the previous language in 40 CFR 63.6(h)(1) excluded sources from opacity standards during periods of SSM. As discussed above, the Court in *Sierra Club* vacated the exemptions contained in this provision and held that the CAA requires that some CAA section 112 standards apply continuously. Consistent with *Sierra Club*, the EPA is finalizing the revised standards in this rule to apply at all times.

## 4. Performance Testing

We are finalizing revisions to the General Provisions table (Table 4) entry for 40 CFR 63.7(e) by redesignating it as 40 CFR 63.7(e)(1) and including a “yes” in column 3. Section 63.7(e)(1) describes performance testing requirements. Section 63.4764(a) of the rule specifies that performance testing must be conducted when the coating operation, emission capture system, and add-on control device are operating at representative conditions. You must

document why the conditions represent normal operation. As in 40 CFR 63.7(e)(1), performance tests conducted under this subpart should not be conducted during periods of startup, shutdown, or malfunction because conditions during malfunctions are often not representative of normal operating conditions. The EPA is finalizing added language that requires the owner or operator to record the process information that is necessary to document operating conditions during the test and include in such record an explanation to support that such conditions represent normal operations. Section 63.7(e) requires that the owner or operator make available to the Administrator such records “as may be necessary to determine the condition of the performance test” available to the Administrator upon request, but does not specifically require the information to be recorded. The added regulatory text to this provision that the EPA is finalizing builds on that requirement and makes explicit the requirement to record the information.

## 5. Monitoring

We are finalizing revisions to the General Provisions table (Table 4) by redesignating 40 CFR 63.8(c) as 40 CFR 63.8(c)(1), adding entries for 40 CFR 63.8(c)(1)(i) through (iii), and including “no” in column 3 for paragraphs (i) and (iii). The cross-references to the general duty and SSM plan requirements in those subparagraphs are not necessary considering other requirements of 40 CFR 63.8 that require good air pollution control practices (40 CFR 63.8(c)(1)) and that set out the requirements of a quality control (QC) program for monitoring equipment (40 CFR 63.8(d)).

## 6. Recordkeeping

We are finalizing revisions to the General Provisions table (Table 4) by adding an entry for 40 CFR 63.10(b)(2)(i) and including a “no” in column 3. Section 63.10(b)(2)(i) describes the recordkeeping requirements during startup and shutdown. These recording provisions are no

longer necessary because the EPA is finalizing that recordkeeping and reporting applicable to normal operations will apply to startup and shutdown. Special provisions applicable to startup and shutdown, such as a startup and shutdown plan, have been removed from the rule (with exceptions discussed below), thereby reducing the need for additional recordkeeping for startup and shutdown periods.

We are finalizing revisions to the General Provisions table (Table 4) by adding an entry for 40 CFR 63.10(b)(2)(iv) and (v) and including a “no” in column 3. When applicable, the provision requires sources to record actions taken during SSM events when actions were inconsistent with their SSM plan. The requirement is no longer appropriate because SSM plans will no longer be required.

We are also finalizing revisions to the General Provisions table (Table 4) by adding an entry for 40 CFR 63.10(c)(15) and including a “no” in column 3. The EPA is finalizing that 40 CFR 63.10(c)(15) no longer applies. When applicable, the provision allows an owner or operator to use the affected source's SSM plan or records kept to satisfy the recordkeeping requirements of the SSM plan, specified in 40 CFR 63.6(e), to also satisfy the requirements of 40 CFR 63.10(c)(10) through (12). The EPA is finalizing elimination of this requirement because SSM plans would no longer be required, and, therefore, 40 CFR 63.10(c)(15) no longer serves any useful purpose for affected units.

## 7. Reporting

We are finalizing revisions to the General Provisions table (Table 4) entry for 40 CFR 63.10(d)(5) by changing the “yes” in column 3 to a “no.” Section 63.10(d)(5) describes the reporting requirements for startups, shutdowns, and malfunctions. To replace the General Provisions reporting requirement for malfunctions, the EPA is finalizing replacing the SSM

report under 40 CFR 63.10(d)(5) with the existing reporting requirements under 40 CFR 63.4720(a). The replacement language differs from the General Provisions requirement in that it eliminates periodic SSM reports as a stand-alone report. We are finalizing language that requires sources that fail to meet an applicable standard at any time to report the information concerning such events in the semiannual report to be required under the final rule. We are finalizing that the report must contain the number, date, time, duration, and the cause of such events (including unknown cause, if applicable), a list of the affected source or equipment, an estimate of the quantity of each regulated pollutant emitted over any emission limit, and a description of the method used to estimate the emissions. Examples of such methods would include mass balance calculations, measurements when available, or engineering judgment based on known process parameters. The EPA is finalizing this requirement to ensure that there is adequate information to determine compliance, to allow the EPA to determine the severity of the failure to meet an applicable standard, and to provide data that may document how the source met the general duty to minimize emissions during a failure to meet an applicable standard.

We will no longer require owners or operators to determine whether actions taken to correct a malfunction are consistent with an SSM plan, because plans would no longer be required. The final amendments, therefore, eliminate the cross-reference to 40 CFR 63.10(d)(5)(i) that contains the description of the previously required SSM report format and submittal schedule from this section. These specifications are no longer necessary because the events will be reported in otherwise required reports with similar format and submittal requirements.

The final amendments also eliminate the cross-reference to 40 CFR 63.10(d)(5)(ii). Section 63.10(d)(5)(ii) describes an immediate report for startups, shutdowns, and malfunctions

when a source failed to meet an applicable standard, but did not follow the SSM plan. We no longer require owners and operators to report when actions taken during a startup, shutdown, or malfunction were not consistent with an SSM plan because plans would no longer be required.

#### *D. Alternative Compliance Equation*

The EPA proposed the option of using a HAP emission factor based on site-specific measurement of HAP emissions to demonstrate compliance with the emission rate without add-on controls compliance option, instead of assuming that all HAP in the coating is emitted to the atmosphere. As discussed below, we are finalizing a new compliance calculation approach in this rulemaking to allow any facility using a similar process to use the approach without requiring the submittal of an alternative monitoring request to the EPA under the provisions of 40 CFR 63.8(f). The final amendment adds compliance flexibility, but does not alter the originally promulgated emission standards in Tables 1 and 2 to Subpart QQQQ of Part 63.

We are finalizing a new equation within the existing compliance demonstration calculations to more adequately represent the HAP amounts emitted by this type of surface coating or any similar coating.

#### *E. Emissions Testing*

The EPA is finalizing amendments to the Surface Coating of Wood Building Products NESHAP that provide an additional compliance demonstration equation. Facilities using the alternative compliance demonstration equation (40 CFR 63.4751(i)) of the emission rate without add-on controls option are required to conduct an initial performance test to demonstrate compliance. Those same facilities are also required to conduct repeat performance testing every 5 years to update/verify the process-specific emission factor used to demonstrate continuing compliance for the new alternative equation (see 40 CFR 63.4752(e)).

#### *F. Electronic Reporting*

The EPA is requiring owners and operators of wood building product surface coating facilities to submit electronic copies of the required notification of compliance status, performance test results, and semiannual compliance status reports through the EPA's Central Data Exchange (CDX) using CEDRI. The final rule requires that performance test reports be submitted to CEDRI using the Electronic Reporting Tool (ERT). The final rule requires owners and operators to submit any future notification of compliance status (*e.g.*, for a new coating process) in portable document format (PDF) to CEDRI. For semiannual compliance status reports, in conjunction with the final rule, owners and operators are provided a spreadsheet template to submit information to CEDRI. The template is expected to facilitate reporting and improve reporting consistency. Facilities will be required to use the template to file their semiannual reports 1 year after the reporting template becomes available in CEDRI. The EPA expects to post the reporting template in conjunction with the final rule, so facilities can expect the requirement to begin for the semiannual reporting using the template by March 4, 2020.

The electronic submittal of the reports addressed in this rulemaking will increase the usefulness of the data contained in these reports; is in keeping with current trends in data availability, accountability, and transparency; will further assist in the protection of public health and the environment; will improve compliance by facilitating the ability of regulated facilities to demonstrate compliance with the requirements and by facilitating the ability of delegated state, local, tribal, and territorial air agencies and the EPA to assess and determine compliance; and will ultimately reduce burden on regulated facilities, delegated air agencies, and the EPA. Electronic reporting eliminates paper-based, manual processes, thereby saving time and resources; simplifying data entry; eliminating redundancies; minimizing data reporting errors;

and providing data quickly and accurately to the affected facilities, air agencies, the EPA, and the public. A more streamlined and accurate review of performance test data will become available to the public through the EPA's Web Factor Information Retrieval System (WebFIRE).

In summary, in addition to supporting regulation development, control strategy development, and other air pollution control activities, having an electronic database populated with performance test data will save industry, state, local, tribal agencies, and the EPA significant time, money, and effort while improving the quality of emission inventories and air quality regulations.

For a more thorough discussion of electronic reporting, see the discussion in the preamble of the proposal, at 83 FR 22754, and the memorandum titled *Electronic Reporting Requirements for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Rules*, available in Docket ID No. EPA-HQ-OAR-2016-0678.

#### *G. EPA Test Method 326*

We are finalizing EPA Method 326 to improve test methodology related to volatile organic HAP content measured in certain surface coatings containing isocyanates. Because there was no EPA test method for isocyanate emissions, as part of this action, we are finalizing specific isocyanate compound sample collection and analytical requirements as EPA Method 326 of 40 CFR part 63, appendix A. EPA Method 326 is based on "A Method for Measuring Isocyanates in Stationary Source Emissions," which was proposed on December 8, 1997 (see 62 FR 64532) as EPA Method 207, but was never promulgated. EPA Method 326 does not significantly modify the sampling and analytical techniques of the previously proposed method, but includes additional QC procedures and associated performance criteria to ensure the overall quality of the measurement.



EPA Method 326 is based on the EPA Method 5 sampling train employing a derivatizing reagent (1-(2-pyridyl) piperazine in toluene) in the impingers to immediately stabilize the isocyanate compounds upon collection. Collected samples are analyzed using high performance liquid chromatography and an appropriate detector under laboratory conditions sufficient to separate and quantify the isocyanate compounds.

The sampling and analytical techniques were validated at three sources according to EPA Method 301 (40 CFR part 63, appendix A) and the report of this validation, titled *Laboratory Development and Field Evaluation of a Generic Method for Sampling and Analysis of Isocyanates*, can be found in the docket, Docket ID No. EPA-HQ-OAR-2016-0678. Under the final rule, this validated technique would be used to reliably collect and analyze gaseous isocyanate emissions from surface coatings of wood building products for methylene diphenyl diisocyanate (MDI), methyl isocyanate (MI), hexamethylene-1,6-diisocyanate (HDI), and 2,4 toluene diisocyanate (TDI). This method will also provide a tool for state and local governments, industry, and the EPA to reliably measure emissions of MDI, MI, HDI, and/or TDI from other types of stationary sources, such as pressed board, flexible foam, and spray booths.

#### *H. IBR under 1 CFR Part 51*

The EPA is finalizing regulatory text that includes IBR. In accordance with requirements of 1 CFR 51.5, the EPA is incorporating by reference National Council of the Paper Industry for Air and Stream Improvement, Inc. (NCASI) Method ISS/FP A105.01 and the following voluntary consensus standards (VCS) described in the amendments to 40 CFR 63.14:

- ANSI A135.4-2012, Basic Hardboard, approved June 8, 2012, IBR approved for 40 CFR 63.4781.

- ASTM D1475-13, Standard Test Method for Density of Liquid Coatings, Inks, and Related Products, approved November 1, 2013, IBR approved for 40 CFR 63.4741(b)(3) and (c) and 63.4751(c).
- ASTM D2111-10 (Reapproved 2015), Standard Test Methods for Specific Gravity and Density of Halogenated Organic Solvents and Their Admixtures, approved June 1, 2015, IBR approved for 40 CFR 63.4741(a)(2)(i).
- ASTM D2369-10 (Reapproved 2015)<sup>e</sup>, Standard Test Method for Volatile Content of Coatings, approved June 1, 2015, IBR approved for 40 CFR 63.4741(a)(2)(ii).
- ASTM D2697-03 (Reapproved 2014), Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings, approved July 1, 2014, IBR approved for 40 CFR 63.4741(a)(2)(iii) and (b).
- ASTM D4840-99 (Reapproved 2018)<sup>e</sup>, Standard Guide for Sampling Chain-of-Custody Procedures, approved August 15, 2018, IBR approved for EPA Method 326 in appendix A to part 63.
- ASTM D6093-97 (Reapproved 2016), Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer, Approved December 1, 2016, IBR approved for 40 CFR 63.4741(a)(2)(iv) and (b)(1).
- ASTM D6348-03 (Reapproved 2010), Standard Test Method for Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy, including Annexes A1 through A8, Approved October 1, 2010, IBR approved for 40 CFR 63.4751(i) introductory paragraph and (i)(4), 63.4752(e), and 63.4766(b) introductory paragraph and (b)(4).

While the American Society for Testing and Materials (ASTM) methods D2697-86 and D6093-97 were incorporated by reference when 40 CFR part 63, subpart QQQQ, was originally promulgated (68 FR 31760), the methods have been updated and reapproved and are also being cited in additional paragraphs in the final rule, requiring a revision to their IBR. NCASI Method ISS/FP A105.01 was incorporated by reference when 40 CFR part 63, subpart DDDD, Table 4 was amended in 2006. The American National Standards Institute (ANSI) method (published by the Composite Panel Association) and the other ASTM methods are being incorporated by reference for 40 CFR part 63, subpart QQQQ, for the first time under this rulemaking.

#### *I. Technical and Editorial Changes*

The following are additional final changes that address technical and editorial corrections:

- Revised the monitoring requirements section in 40 CFR 63.4764 to clarify ongoing compliance provisions to address startup and shutdown periods when certain parameters cannot be met;
- Revised the recordkeeping requirements section in 40 CFR 63.4730 to include the requirement to record information on failures to meet the applicable standard;
- Revised the references to several test method appendices;
- Revised the General Provisions applicability table (Table 4 to Subpart QQQQ of Part 63) to align with sections of the General Provisions that have been amended or reserved over time; and
- Revised 40 CFR 63.4681 to update reference to 40 CFR Part 63, subpart DDDD.

## **V. Summary of Cost, Environmental, and Economic Impacts and Additional Analyses Conducted**

### *A. What are the affected facilities?*

There are currently 57 wood building product manufacturing facilities operating in the United States that conduct surface coating operations and are subject to the Surface Coating of Wood Building Products NESHAP. The 40 CFR part 63, subpart QQQQ, affected source is the collection of all the items listed in 40 CFR 63.4682(b)(1) through (4) that are used for surface coating of wood building products. A new affected source is a completely new wood building products surface coating source where previously no wood building products surface coating source had existed.

### *B. What are the air quality impacts?*

At the current level of control, the EPA estimates emissions of total HAP are approximately 270 tpy.<sup>5</sup> Compared to pre-MACT levels, this represents a significant reduction of HAP for the category. Prior to the development of the Surface Coating of Wood Building Products NESHAP, the EPA estimated HAP emissions to be 14,300 tons annually.<sup>6</sup> The final amendments will require all 57 major sources with equipment subject to the Wood Building Products Coating NESHAP to operate without the SSM exemption. We are unable to quantify the specific emissions reductions associated with eliminating the SSM exemption, but

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<sup>5</sup> For more information, see the memorandum in the docket titled, *Addendum to Preparation of the Residual Risk Modeling Input File for Subpart QQQQ*; Docket ID No. EPA-HQ-OAR-2016-0678.

<sup>6</sup> *National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Wood Building Products (Surface Coating) Industry--Background Information for Proposed Standards*; EPA-453/R-00-003; May 2001.

eliminating the SSM exemption will reduce emissions by requiring facilities to meet the applicable standard during SSM periods.

Indirect or secondary air emissions impacts are impacts that would result from the increased electricity usage associated with the operation of control devices (*i.e.*, increased secondary emissions of criteria pollutants from power plants). Energy impacts consist of the electricity and steam needed to operate control devices and other equipment that would be required under this rule. The EPA expects no secondary air emissions impacts or energy impacts from this rulemaking because this action does not amend the numeric emission limit.

For further information, see the memoranda titled *Cost Impacts of the Subpart QQQQ Residual Risk and Technology Review* and *Economic Impact and Small Business Screening Assessments for Final Amendments to the National Emission Standards for Hazardous Air Pollutants: Surface Coating of Wood Building Products*, in the docket for this action, Docket ID No. EPA-HQ-OAR-2016-0678.

### *C. What are the cost impacts?*

We estimate that, as a result of these final amendments, each facility in the source category will experience reporting and recordkeeping costs. Each facility will experience costs to read and understand the rule amendments. Costs associated with the elimination of the SSM exemption were estimated as part of the reporting and recordkeeping costs and include time for re-evaluating previously developed SSM record systems. Costs associated with the requirement to electronically submit notifications and semiannual compliance reports using CEDRI were estimated as part of the reporting and recordkeeping costs and include time for becoming familiar with CEDRI and the reporting template for semiannual compliance reports. The reporting and recordkeeping costs are presented in this section of the preamble. A thorough

discussion of the facility-by-facility costs is contained in the supporting statement for the 40 CFR part 63, subpart QQQQ amendments, *Supporting Statement, NESHAP for the Wood Building Products Surface Coating Industry (40 CFR Part 63, Subpart QQQQ) (Final Amendments)*; December 2018, which can be found in the docket for this rule, Docket ID No. EPA-HQ-OAR-2016-0678.

The EPA estimates that one facility will be impacted by this final regulatory action. This facility will conduct an initial performance test to demonstrate compliance with the alternative compliance equation, as related to their request for an alternative monitoring method. This initial performance test has a cost of \$22,000, and the repeat testing will cost \$22,000 every 5 years.

The total estimated labor costs for the rule are summarized in the Supporting Statement for the information collection request (ICR) in the docket for this action. The estimated labor cost is \$38,000 for all 57 affected facilities to become familiar with the final rule requirements. For further information, see the memorandum titled *Cost Impacts of the Subpart QQQQ Residual Risk and Technology Review*, in the docket for this action, Docket ID No. EPA-HQ-OAR-2016-0678.

#### *D. What are the economic impacts?*

Economic impact analyses focus on changes in market prices and output levels. If changes in market prices and output levels in the primary markets are significant enough, impacts on other markets may also be examined. Both the magnitude of costs needed to comply with a final rule and the distribution of these costs among affected facilities can have a role in determining how the market will change in response to a final rule.

For the one facility expected to conduct an initial performance test and become familiar with the final rule requirements, the costs associated with 40 CFR part 63, subpart QQQQ's final

requirements are approximately 0.002 percent of annual sales revenues. For the remaining 56 facilities, the costs associated with becoming familiar with the final rule requirements are less than 0.001 percent of annual sales revenues. These costs are not expected to result in a significant market impact, regardless of whether they are passed on to the purchaser or absorbed by the firms. For further information, see the memorandum titled *Economic Impact and Small Business Screening Assessments for Final Amendments to the National Emission Standards for Hazardous Air Pollutants: Surface Coating of Wood Building Products*, in the docket for this action, Docket ID No. EPA-HQ-OAR-2016-0678.

*E. What are the benefits?*

The EPA did not change any of the emission limit requirements and estimates the final changes to SSM, recordkeeping, reporting, and monitoring are not economically significant. Because these final amendments are not considered economically significant, as defined by Executive Order 12866, and because no emission reductions were estimated, we did not estimate any benefits from reducing emissions.

*F. What analysis of environmental justice did we conduct?*

Executive Order 12898 (59 FR 7629, February 16, 1994) establishes federal executive policy on EJ. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make EJ part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

To examine the potential for any EJ issues that might be associated with the source category, we performed a demographic analysis, which is an assessment of risks to individual demographic groups of the populations living within 5 kilometers (km) and within 50 km of the

facilities. In the analysis, we evaluated the distribution of HAP-related cancer and noncancer risks from the Surface Coating of Wood Building Products source category across different demographic groups within the populations living near facilities.<sup>7</sup>

The results of the demographic analysis are summarized in Table 3 below. These results for various demographic groups are based on the estimated risks from actual emissions levels for the population living within 50 km of the facilities.

**Table 3. Surface Coating of Wood Building Products Source Category Demographic Risk Analysis Results**

	<b>Nationwide</b>	<b>Population with Cancer Risk at or Above 1-in-1 Million Due to Wood Building Products Surface Coating<sup>1</sup></b>	<b>Population with Chronic HI Above 1 Due to Wood Building Products Surface Coating</b>
Total Population	317,746,049	0	0
Race by Percent			
White	62	0	0
All Other Races	38	0	0
Race by Percent			
White	62	0	0
African American	12	0	0
Native American	0.8	0	0
Other and Multiracial	7	0	0
Ethnicity by Percent			
Hispanic	18	0	0
Non-Hispanic	82	0	0
Income by Percent			
Below Poverty Level	14	0	0
Above Poverty Level	86	0	0

<sup>7</sup> Demographic groups included in the analysis are: White, African American, Native American, other races, and multiracial, Hispanic or Latino, children 17 years of age and under, adults 18 to 64 years of age, adults 65 years of age and over, adults without a high school diploma, people living below the poverty level, people living two times the poverty level, and linguistically isolated people.



	<b>Nationwide</b>	<b>Population with Cancer Risk at or Above 1-in-1 Million Due to Wood Building Products Surface Coating<sup>1</sup></b>	<b>Population with Chronic HI Above 1 Due to Wood Building Products Surface Coating</b>
<b>Education by Percent</b>			
Over 25 and without High School Diploma	14	0	0
Over 25 and with a High School Diploma	86	0	0
<b>Linguistically Isolated by Percent</b>			
Linguistically Isolated	6%	0%	0%

<sup>1</sup> Based on actual emissions in the category.

The results of the Surface Coating of Wood Building Products source category demographic analysis indicate that emissions from the source category do not expose people to a cancer risk at or above 1-in-1 million based on actual emissions. Also, no people are exposed to a chronic noncancer TOSHI greater than 1. The percentages of the at-risk population are demographically similar to their respective nationwide percentages for all demographic groups.

The EPA received a comment on our proposed rule stating that we ignored unacceptably disproportionate effects on EJ communities. As noted above, we re-evaluated our risk impacts from the category with a revised risk assessment. One aspect of this assessment was that it generated a risk report based on a more refined risk assessment model. Those risk model results did show lower risk in the EJ communities where larger impacts were noted at proposal. The EPA considered this comment and has reaffirmed its determination that this final rule will not have disproportionately high and adverse human health or environmental effects on minority, low income, or indigenous populations because it increases the level of environmental protection for all affected populations.

The methodology and the results of the demographic analysis are presented in a technical report, *Risk and Technology Review – Analysis of Demographic Factors for Populations Living Near Surface Coating of Wood Building Products Source Category Operations*, available in the docket for this action, EPA–HQ–OAR–2016–0678.

*G. What analysis of children’s environmental health did we conduct?*

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. This action’s health and risk assessments are contained in *Residual Risk Assessment for the Surface Coating of Wood Building Products Source Category in Support of the 2018 Risk and Technology Review Final Rule*, available in the docket for this action, Docket ID No. EPA–HQ–OAR–2016–0678.

## **VI. Statutory and Executive Order Reviews**

Additional information about these statutes and Executive Orders can be found at <https://www.epa.gov/laws-regulations/laws-and-executive-orders>.

*A. Executive Orders 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review*

This action is not a significant regulatory action and was, therefore, not submitted to the Office of Management and Budget (OMB) for review.

*B. Executive Order 13771: Reducing Regulation and Controlling Regulatory Costs*

This action is not an Executive Order 13771 regulatory action because this action is not significant under Executive Order 12866.

### *C. Paperwork Reduction Act (PRA)*

The information collection activities in this final rule have been submitted for approval to OMB under the PRA. The ICR document that the EPA prepared has been assigned EPA ICR number 2034.08. You can find a copy of the ICR in the docket for this rule (Docket ID No. EPA-HQ-OAR-2016-0678), and it is briefly summarized here.

We are finalizing changes to the paperwork requirements for the Surface Coating of Wood Building Products NESHAP in the form of eliminating the SSM reporting and SSM plan requirements, and requiring electronic submittal of semiannual compliance reports and any future notifications of compliance status or performance test reports.

*Respondents/affected entities:* Respondents include wood building product manufacturing facilities with surface coating operations subject to the Surface Coating of Wood Building Products NESHAP.

*Respondent's obligation to respond:* Mandatory (authorized by section 114 of the CAA).

*Estimated number of respondents:* 57.

*Frequency of response:* The frequency of responses varies depending on the burden item. Responses include notifications, reports of performance tests, and semiannual compliance reports.

*Total estimated burden:* The annual recordkeeping and reporting burden for this information collection, averaged over the first 3 years of this ICR, is estimated to total 20,208 labor hours per year. Burden is defined at 5 CFR 1320.3(b).

*Total estimated cost:* \$1,465,000 per year in labor costs, including \$38,000 in labor cost for all 57 facilities to become familiar with the final rule requirements. An additional cost of \$22,000 is estimated for an initial performance test at one facility during the 3-year ICR period.

These estimated costs represent the full ongoing information collection burden for 40 CFR part 63, subpart QQQQ, as revised by the final amendments being promulgated.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9. In addition, the EPA is amending the table in 40 CFR part 9 to list the regulatory citations for the information collection activities contained in this final rule.

#### *D. Regulatory Flexibility Act (RFA)*

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden, or otherwise has a positive economic effect on the small entities subject to the rule. We conducted an economic impact analysis which is available in the docket for this final rule, Docket ID No. EPA-HQ-OAR-2016-0678. For all but one of the facilities affected by the final rule, including the small businesses, the costs associated with the final rule requirements are less than 0.001 percent of annual sales revenues; for the remaining facility, the costs are less than 0.002 percent of annual sales revenues. We have, therefore, concluded that this action will have no net regulatory burden for all directly regulated small entities.

#### *E. Unfunded Mandates Reform Act (UMRA)*

This action does not contain an unfunded mandate of \$100 million or more as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments.

The action imposes no enforceable duty on any state, local, or tribal governments or the private sector.

*F. Executive Order 13132: Federalism*

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

*G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments*

This action does not have tribal implications as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments, on the relationship between the federal government and Indian Tribes, or on the distribution of power and responsibilities between the federal government and Indian Tribes, as specified in Executive Order 13175. This final rule imposes requirements on owners and operators of wood building product surface coating facilities and not tribal governments. The EPA discussed the proposed action at a meeting of the National Tribal Air Association,<sup>8</sup> and has not been informed and does not know of any wood building product surface coating facilities owned or operated by Indian tribal governments. However, if there are any, the effect of this rule on communities of tribal governments would not be unique or disproportionate to the effect on other communities. Thus, Executive Order 13175 does not apply to this action.

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<sup>8</sup> See *National Tribal Air Association - EPA Air Policy Update Call*; Thursday May 31, 2018, in the docket for this rule; Docket ID No. EPA-HQ-OAR-2016-0678.

*H. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks*

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. A description of the health risk assessment conducted as part of this action is provided in sections III and IV of this preamble and further documented in the risk report titled *Residual Risk Assessment for the Surface Coating of Wood Building Products Source Category in Support of the 2018 Risk and Technology Review Final Rule*, in the docket for this action, Docket ID No. EPA-HQ-OAR-2016-0678.

*I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*

This action is not subject to Executive Order 13211 because it is not a significant regulatory action under Executive Order 12866.

*J. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR Part 51*

This action involves technical standards. The EPA is finalizing the use of NCASI Method ISS/FP A105.01, “Impinger Source Sampling Method for Selected Aldehydes, Ketones, and Polar Compounds,” December 2005, Methods Manual, and ASTM D6348-03 (Reapproved 2010), “Standard Test Method for Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy” as alternatives to using EPA Method 320 under certain conditions, and is incorporating these alternative methods by reference. EPA Method 320 is added for the measurement of organic HAP emissions if formaldehyde is a major organic HAP component of the surface coating exhaust stream. EPA Method 320 can also be

used for other HAP that may be found in wood building products coatings. NCASI Method ISS/FP A105.01 is an impinger source sampling method for the collection and analysis of a wider range of aldehydes, ketones, and polar organics, has previously been incorporated by reference at 40 CFR 63.14, and is reasonably available from National Council of the Paper Industry for Air and Stream Improvement, Inc. (NCASI), P.O. Box 133318, Research Triangle Park, NC 27709-3318 or at <http://www.ncasi.org>.

Instead of the current ASTM D6348-12 standard, the ASTM D6348-03 (Reapproved 2010) standard is referenced in the Surface Coating of Wood Building Products NESHAP. The QC criteria in ASTM D6348-03 (Reapproved 2010) are more closely matched to the testing requirements in this NESHAP. Use of ASTM D6348-03 (Reapproved 2010) is defined in 40 CFR 63.4751(i)(4). ASTM D6348-03 (Reapproved 2010) is an extractive FTIR spectroscopy-based field test method and is used to quantify gas phase concentrations of multiple target compounds in emission streams from stationary sources.

ANSI A135.4-2012, “Basic Hardboard,” is reasonably available from the Composite Panel Association, 19465 Deerfield Avenue, Suite 306, Leesburg, VA 20176. The standard specifies requirements and test methods for water absorption, thickness swelling, modulus of rupture, tensile strength, surface finish, dimensions, squareness, edge straightness, and moisture content for five classes of hardboard, including tileboard, part of a subcategory in the standard.

The EPA is also using ASTM D4840-99 (Reapproved 2018)<sup>e</sup>, “Standard Guide for Sampling Chain-of-Custody Procedures,” in EPA Method 326 for its chain of custody procedures and is incorporating this alternative method by reference. The ASTM D4840-99 (Reapproved 2018)<sup>e</sup> guide contains a comprehensive discussion of potential requirements for a sample chain-of-custody program and describes the procedures involved in sample chain-of-

custody. The purpose of ASTM D4840-99 (Reapproved 2018)<sup>e</sup> procedures is to provide accountability for and documentation of sample integrity from the time samples are collected until the time samples are disposed. EPA Method 326 is added for the measurement of organic HAP emissions if isocyanate is a major organic HAP component of the surface coating exhaust stream.

The EPA is finalizing the use of the following four VCS as alternatives to EPA Method 24 for the determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings and incorporate these VCS by reference:

- ASTM D2111-10 (Reapproved 2015), “Standard Test Methods for Specific Gravity of Halogenated Organic Solvents and Their Admixtures.” These test methods are used for the determination of the specific gravity of halogenated organic solvents and solvent admixtures.
- ASTM D2369-10 (Reapproved 2015)<sup>e</sup>, “Standard Test Method for Volatile Content of Coatings.” This test method describes a procedure used for the determination of the weight percent volatile content of solvent-borne and waterborne coatings.
- ASTM D2697-03 (Reapproved 2014), “Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings.” This test method is applicable to the determination of the volume of nonvolatile matter in coatings.
- ASTM D6093-97 (Reapproved 2016), “Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer.” This test method is used for the determination of the percent volume nonvolatile matter in clear and pigmented coatings.



The ASTM standards are reasonably available from the American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, Post Office Box C700, West Conshohocken, PA 19428–2959. See <http://www.astm.org/>.

While the EPA has identified another 18 VCS as being potentially applicable to this final rule, we have decided not to use these VCS in this rulemaking. The use of these VCS would not be practical due to lack of equivalency, documentation, validation data, and other important technical and policy considerations. See the memorandum titled *Voluntary Consensus Standard Results for National Emission Standards for Hazardous Air Pollutants: Surface Coating of Wood Building Products*, in the docket for this final rule for the reasons for these determinations.

Under 40 CFR 63.7(f) and 40 CFR 63.8(f) of subpart A of the General Provisions, a source may apply to the EPA for permission to use alternative test methods or alternative monitoring requirements in place of any required testing methods, performance specifications, or procedures in the final rule or any amendments.

*K. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, and/or indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994).

The documentation for this decision is contained in section IV.A of this preamble and the technical report titled *Risk and Technology Review – Analysis of Demographic Factors for Populations Living Near Wood Building Products Surface Coating Sources*, which is located in the public docket for this action, Docket ID No. EPA–HQ–OAR–2016–0678.

We examined the potential for any EJ issues that might be associated with the source category by performing a demographic analysis of the population close to the facilities. See section V.F, above. In this analysis, we evaluated the distribution of HAP-related cancer and noncancer risks from the Surface Coating of Wood Building Products NESHAP source category across different social, demographic, and economic groups within the populations living near facilities identified as having the highest risks. The methodology and the results of the demographic analyses are included in a technical report, *Risk and Technology Review – Analysis of Demographic Factors for Populations Living Near Surface Coating of Wood Building Products Source Category Operations*, available in the docket for this action, Docket ID No. EPA-HQ-OAR-2016-0678.

The results of the Surface Coating of Wood Building Products NESHAP source category demographic analysis indicate that approximately 700 people may be exposed to a cancer risk of 1-in-1 million based on allowable emissions from the source category and no one is exposed to a chronic noncancer TOSHI greater than 1. The specific demographic results indicate that the percentage of the population potentially impacted by wood building products emissions is similar among all demographic groups (see Table 3 of this preamble). The proximity results (irrespective of risk) indicate that the population percentages for certain demographic categories within 5 km of source category emissions are greater than the corresponding national percentage for those same demographics. The following demographic percentages for populations residing within close proximity to facilities with Surface Coating of Wood Building Products source category facilities are higher than the corresponding nationwide percentage: African American, ages 65 and up, over age 25 without a high school diploma, and below the poverty level.

The risks due to actual HAP emissions from this source category are low for all populations (*e.g.*, inhalation cancer risks are less than 1-in-1 million for all populations and noncancer HIs are less than 1). We do not expect this final rule to achieve significant reductions in HAP emissions. We have concluded that this final rule will not have unacceptable adverse human health or environmental effects on minority or low-income populations. The final rule does not affect the level of protection provided to human health or the environment. However, this final rule will provide additional benefits to these demographic groups by improving the compliance, monitoring, and implementation of the NESHAP.

*L. Congressional Review Act (CRA)*

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

**List of Subjects in 40 CFR Part 63**

Environmental protection, Administrative practice and procedures, Air pollution control, Hazardous substances, Incorporation by reference, National Emission Standards for Hazardous Air Pollutants: Surface Coating of Wood Building Products Residual Risk and Technology Review, Intergovernmental relations, Reporting and recordkeeping requirements.

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Dated: December 20, 2018.

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Andrew R. Wheeler,  
Acting Administrator.

For the reasons set out in the preamble, title 40, chapter I, part 63 of the Code of Federal Regulations is amended as follows:

**PART 63—[AMENDED]**

1. The authority citation for part 63 continues to read as follows:

**Authority:** 42 U.S.C. 7401 *et seq.*

**Subpart A—[Amended]**

2. Section 63.14 is amended:

a. In paragraph (a), by removing—

“[http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html)” and adding “[www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html)” in its place;

b. By redesignating the paragraphs in the Old Paragraph column as the paragraphs in the New Paragraph column as follows:

Old paragraph	New paragraph
---------------	---------------

(c)	(f)
-----	-----

(d)	(g)
-----	-----

(e) through (g)	(c) through (e)
-----------------	-----------------

(l) through (s)	(m) through (t);
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c. In paragraph (h)—

i. In the introductory text, by removing “American Society for Testing and Materials (ASTM)” and adding “ASTM International” in its place;

ii. By redesignating the paragraphs in the Old Paragraph column as the paragraphs in the New Paragraph column as follows:

Old Paragraph	New Paragraph
(h)(13) through (h)(19)	(h)(14) through (h)(20)
(h)(20) through (h)(23)	(h)(22) through (h)(25)
(h)(24) through (h)(26)	(h)(27) through (h)(29)
(h)(27) through (h)(59)	(h)(31) through (h)(63)
(h)(60) through (h)(73)	(h)(65) through (h)(78)
(h)(74) through (h)(105)	(h)(80) through (h)(111);

iii. By adding new paragraphs (h)(13), (21), (26), (30), (64), and (79); and

iv. By revising newly redesignated paragraph (h)(84).

d. By adding new paragraph (l); and

e. By revising newly designated paragraph (p)(5).

The revisions and additions read as follows:

#### **§63.14 Incorporations by reference.**

\* \* \* \* \*

(h) \* \* \*

(13) ASTM D1475-13, Standard Test Method for Density of Liquid Coatings, Inks, and Related Products, approved November 1, 2013, IBR approved for §§63.4741(b) and (c) and 63.4751(c).

\* \* \* \* \*

(21) ASTM D2111-10 (Reapproved 2015), Standard Test Methods for Specific Gravity and Density of Halogenated Organic Solvents and Their Admixtures, approved June 1, 2015, IBR approved for §63.4741(a).

\* \* \* \* \*

(26) ASTM D2369-10 (Reapproved 2015)<sup>e</sup>, Standard Test Method for Volatile Content of Coatings, approved June 1, 2015, IBR approved for §63.4741(a).

\* \* \* \* \*

(30) ASTM D2697-03 (Reapproved 2014), Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings, approved July 1, 2014, IBR approved for §63.4741(a) and (b).

\* \* \* \* \*

(64) ASTM D4840-99 (Reapproved 2018)<sup>e</sup>, Standard Guide for Sampling Chain-of-Custody Procedures, approved August 15, 2018, IBR approved for appendix A to part 63.

\* \* \* \* \*

(79) ASTM D6093-97 (Reapproved 2016), Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer, Approved December 1, 2016, IBR approved for §63.4741(a) and (b).

\* \* \* \* \*

(84) ASTM D6348-03 (Reapproved 2010), Standard Test Method for Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy, including Annexes A1 through A8, Approved October 1, 2010, IBR approved for §§63.1571(a), 63.4751(i), 63.4752(e), 63.4766(b), tables 4 and 5 to subpart JJJJJ, tables 4 and 6 to subpart KKKKK, tables 1, 2, and 5 to subpart UUUUU and appendix B to subpart UUUUU.

\* \* \* \* \*

(I) Composite Panel Association, 19465 Deerfield Avenue, Suite 306, Leesburg, VA 20176, Telephone (703)724-1128, and [www.compositepanel.org](http://www.compositepanel.org).

(1) ANSI A135.4-2012, Basic Hardboard, approved June 8, 2012, IBR approved for §63.4781.

(2) [Reserved]

\* \* \* \* \*

(p) \* \* \*

(5) NCASI Method ISS/FP A105.01, Impinger Source Sampling Method for Selected Aldehydes, Ketones, and Polar Compounds, December 2005, Methods Manual, IBR approved for table 4 to subpart DDDD and §§63.4751(i) and 63.4752(e).

\* \* \* \* \*

#### **Subpart QQQQ—[Amended]**

4. Section 63.4681 is amended by revising paragraph (c)(1) introductory text to read as follows:

#### **§63.4681 Am I subject to this subpart?**

\* \* \* \* \*

(c) \*\*\*\*\*.

(1) Surface coating in the processes identified in paragraphs (c)(1)(i) through (xi) of this section that are part of plywood and composite wood product manufacturing and subject to subpart DDDD of this part including:

\*\*\*\*\*

5. Section 63.4683 is amended by revising paragraphs (a) and (b) to read as follows:

#### **§63.4683 When do I have to comply with this subpart?**

\* \* \* \* \*

(a) For a new or reconstructed affected source, the compliance date is the applicable date in paragraph (a)(1) or (2) of this section:

(1) If the initial startup of your new or reconstructed affected source is before May 28, 2003, the compliance date is May 28, 2003; except that the compliance date for the revised requirements promulgated at §§63.4700, 63.4710, 63.4720, 63.4730, 63.4741, 63.4751, 63.4752, 63.4761, 63.4763, 63.4764, 63.4766, 63.4781, table 4 of this subpart QQQQ, and appendix A to 40 CFR part 63 is **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

(2) If the initial startup of your new or reconstructed affected source occurs after May 28, 2003, the compliance date is **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]** or the date of initial startup of your affected source, whichever is later; except that if you commenced construction or reconstruction of your new or reconstructed affected source after May 28, 2003, but on or before May 16, 2018, the compliance date for the revised requirements promulgated at §§63.4700, 63.4710, 63.4720, 63.4730, 63.4741, 63.4751, 63.4752, 63.4761, 63.4763, 63.4764, 63.4766, 63.4781, table 4 of this subpart QQQQ, and appendix A to 40 CFR part 63 is **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

(b) For an existing affected source, the compliance date is the date 3 years after May 28, 2003, except that the compliance date for the revised requirements promulgated at §§63.4700, 63.4710, 63.4720, 63.4730, 63.4741, 63.4751, 63.4752, 63.4761, 63.4763, 63.4764, 63.4766, 63.4781, table 4 of this subpart QQQQ of part 63, and appendix A to 40 CFR part 63 is **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.



\* \* \* \* \*

6. Section 63.4700 is amended by:

- a. Revising paragraph (a)(2) introductory text and paragraphs (a)(2)(i) and (ii);
- b. Adding paragraph (a)(3); and
- c. Revising paragraphs (b) and (d).

The revisions and addition read as follows:

**§63.4700 What are my general requirements for complying with this subpart?**

(a) \* \* \*\*

(2) Any coating operation(s) at existing sources for which you use the emission rate with add-on controls option, as specified in §63.4691(c), must be in compliance with the applicable emission limitations as specified in paragraphs (a)(2)(i) through (iii) of this section.

(i) Before **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, the coating operation(s) must be in compliance with the applicable emission limit in §63.4690 at all times, except during periods of startup, shutdown, and malfunction (SSM). On and after **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, the coating operation(s) must be in compliance with the applicable emission limit in §63.4690 at all times.

(ii) Before **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, the coating operation(s) must be in compliance with the applicable operating limits for emission capture systems and add-on control devices required by §63.4692 at all times, except during periods of SSM, and except for solvent recovery systems for which you conduct liquid-liquid material balances according to §63.4761(j). On and after **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, the

coating operation(s) must be in compliance with the operating limits for emission capture systems and add-on control devices required by §63.4692 at all times, except for solvent recovery systems for which you conduct liquid-liquid material balances according to §63.4761(j).

\* \* \* \* \*

(3) For new or reconstructed sources with initial startup after May 16, 2018, any coating operation(s) for which you use the emission rate with add-on controls option, as specified in §63.4691(c), must be in compliance with the applicable emission limitations and work practice standards as specified in paragraphs (a)(3)(i) through (iii) of this section.

(i) The coating operation(s) must be in compliance with the applicable emission limit in §63.4690 at all times.

(ii) The coating operation(s) must be in compliance with the operating limits for emission capture systems and add-on control devices required by §63.4692 at all times, except for solvent recovery systems for which you conduct liquid-liquid material balances according to §63.4761(j).

(iii) The coating operation(s) must be in compliance with the work practice standards in §63.4693 at all times.

(b) For existing sources as of **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, before **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, you must always operate and maintain your affected source, including all air pollution control and monitoring equipment you use for purposes of complying with this subpart, according to the provisions in §63.6(e)(1)(i). On and after **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL**

**REGISTER]** for such existing sources and after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]** for new or reconstructed sources, you must always operate and maintain your affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved. Determination of whether a source is operating in compliance with operation and maintenance requirements will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

\* \* \* \* \*

(d) For existing sources, before **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, if your affected source uses an emission capture system and add-on control device, you must develop a written startup, shutdown, and malfunction plan (SSMP) according to the provisions in §63.6(e)(3). The SSMP must address startup, shutdown, and corrective actions in the event of a malfunction of the emission capture system or the add-on control device. The SSMP must also address any coating operation equipment that may cause increased emissions or that would affect capture efficiency if the process equipment malfunctions, such as conveyors that move parts among enclosures.

7. Section 63.4710 is amended by revising paragraph (c)(8)(ii) to read as follows:

**§63.4710 What notifications must I submit?**

\* \* \* \* \*

(c) \* \* \*

(8) \* \* \*

(ii) For the emission rate without add-on controls option, provide the calculation of the total mass of organic HAP emissions for each month; the calculation of the total volume of coating solids used each month; and the calculation of the 12-month organic HAP emission rate, using Equations 1 and 1A (or 1A-alt) through 1C, 2, and 3, respectively, of §63.4751.

\* \* \* \* \*

8. Section 63.4720 is amended by:

- a. Revising paragraph (a)(6)(ii) and paragraph (a)(7) introductory text;
- b. Redesignating paragraphs (a)(7)(i) through (xiv) as paragraphs (a)(7)(i)(A) through (N);
- c. Adding paragraph (a)(7)(i) introductory text and paragraph (a)(7)(ii);
- d. Revising paragraph (c) introductory text; and
- e. Adding paragraph (d).

The revisions and additions read as follows:

**§63.4720 What reports must I submit?**

(a) \* \* \*

(6) \* \* \*

(ii) The calculations used to determine the 12-month organic HAP emission rate for the compliance period in which the deviation occurred. You must provide the calculations for Equations 1, 1A (or 1A-alt) through 1C, 2, and 3 in §63.4751; and if applicable, the calculation used to determine mass of organic HAP in waste materials according to §63.4751(e)(4). You do not need to submit background data supporting these calculations (*e.g.*, information provided by materials suppliers or manufacturers, or test reports).

\* \* \* \* \*

(7) *Deviations: emission rate with add-on controls option.* You must be in compliance with the emission limitations in this subpart as specified in paragraphs (a)(7)(i) and (ii) of this section.

(i) For existing sources, before **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, if you used the emission rate with add-on controls option and there was a deviation from an emission limitation (including any periods when emissions bypassed the add-on control device and were diverted to the atmosphere), the semiannual compliance report must contain the information in paragraphs (a)(7)(i)(A) through (N) of this section. This includes periods of SSM during which deviations occurred.

\* \* \* \* \*

(ii) After **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]** for new and reconstructed sources, and on and after **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]** for existing sources, if you used the emission rate with add-on controls option and there was a deviation from an emission limitation (including any periods when emissions bypassed the add-on control device and were diverted to the atmosphere), the semiannual compliance report must contain the information in paragraphs (a)(7)(ii)(A) through (M) of this section.

(A) The beginning and ending dates of each compliance period during which the 12-month organic HAP emission rate exceeded the applicable emission limit in §63.4690.

(B) The calculations used to determine the 12-month organic HAP emission rate for each compliance period in which a deviation occurred. You must provide the calculation of the total mass of organic HAP emissions for the coatings, thinners, and cleaning materials used each

month, using Equations 1 and 1A through 1C of §63.4751; and, if applicable, the calculation used to determine mass of organic HAP in waste materials according to §63.4751(e)(4); the calculation of the total volume of coating solids used each month, using Equation 2 of §63.4751; the calculation of the mass of organic HAP emission reduction each month by emission capture systems and add-on control devices, using Equations 1 and 1A through 1D of §63.4761, and Equations 2, 3, and 3A through 3C of §63.4761, as applicable; the calculation of the total mass of organic HAP emissions each month, using Equation 4 of §63.4761; and the calculation of the 12-month organic HAP emission rate, using Equation 5 of §63.4761. You do not need to submit the background data supporting these calculations (*e.g.*, information provided by materials suppliers or manufacturers, or test reports).

(C) A brief description of the CPMS.

(D) The date of the latest CPMS certification or audit.

(E) The date and time that each CPMS was inoperative, except for zero (low-level) and high-level checks.

(F) The date, time, and duration that each CPMS was out-of-control, including the information in §63.8(c)(8).

(G) The date and time period of each deviation from an operating limit in Table 3 to this subpart, date and time period of any bypass of the add-on control device.

(H) A summary of the total duration of each deviation from an operating limit in Table 3 to this subpart, each bypass of the add-on control device during the semiannual reporting period, and the total duration as a percent of the total source operating time during that semiannual reporting period.

(I) A breakdown of the total duration of the deviations from the operating limits in Table 3 to this subpart and bypasses of the add-on control device during the semiannual reporting period by identifying deviations due to control equipment problems, process problems, other known causes, and other unknown causes; a list of the affected source or equipment, an estimate of the quantity of each regulated pollutant emitted over any emission limit, and a description of the method used to estimate the emissions.

(J) A summary of the total duration of CPMS downtime during the semiannual reporting period and the total duration of CPMS downtime as a percent of the total source operating time during that semiannual reporting period.

(K) A description of any changes in the CPMS, coating operation, emission capture system, or add-on control device since the last semiannual reporting period.

(L) For each deviation from the standard, including work practice standards, a description of the deviation, the date and time period of the deviation, and the actions you took to correct the deviation.

(M) A statement of the cause of each deviation.

\* \* \* \* \*

(c) *SSM reports.* For existing sources, before **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, if you used the emission rate with add-on controls option and you had an SSM during the semiannual reporting period, you must submit the reports specified in paragraphs (c)(1) and (2) of this section.

\* \* \* \* \*

(d) *Electronic reporting.* (1) Within 60 days after the date of completing each performance test required by this subpart, you must submit the results of the performance test following the procedures specified in paragraphs (d)(1)(i) through (iii) of this section.

(i) *Data collected using test methods supported by EPA's Electronic Reporting Tool (ERT) as listed on EPA's ERT Website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>) at the time of the test.* Submit the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through EPA's Central Data Exchange (CDX) (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of EPA's ERT. Alternatively, you may submit an electronic file consistent with the extensible markup language (XML) schema listed on EPA's ERT Website.

(ii) *Data collected using test methods that are not supported by EPA's ERT as listed on EPA's ERT Website at the time of the test.* The results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on EPA's ERT Website. Submit the ERT generated package or alternative file to the EPA via CEDRI.

(iii) *Confidential business information (CBI).* If you claim some of the information submitted under paragraph (a)(1) of this section is CBI, you must submit a complete file, including information claimed to be CBI, to the EPA. The file must be generated through the use of EPA's ERT or an alternate electronic file consistent with the XML schema listed on EPA's ERT Website. Submit the file on a compact disc, flash drive, or other commonly used electronic storage medium and clearly mark the medium as CBI. Mail the electronic medium to U.S. EPA/OAQPS/CORE CBI Office, Attention: Group Leader, Measurement Policy Group, MD



C404-02, 4930 Old Page Rd., Durham, NC 27703. The same file with the CBI omitted must be submitted to the EPA via EPA's CDX as described in paragraph (d)(1)(i) of this section.

(2) You must submit the Notification of Compliance Status required in §63.4710(c) and the semiannual compliance reports required in paragraph (a) of this section to the EPA via the CEDRI. (CEDRI can be accessed through the EPA's CDX (<https://cdx.epa.gov/>)). For semiannual compliance reports, you must use the appropriate electronic report in CEDRI for this subpart or an alternative electronic file format consistent with the XML schema listed on the CEDRI Website (<https://www.epa.gov/electronic-reporting-air-emissions/compliance-and-emissions-data-reporting-interface-cedri>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, you must submit the report to the Administrator at all the appropriate addresses listed in §63.13. Once the reporting template has been available in CEDRI for 1 year, you must begin submitting all subsequent reports via CEDRI. For the Notification of Compliance Status, you must submit a file in portable document format (PDF) to CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted.

(3) If you are required to electronically submit a report through CEDRI in EPA's CDX, you may assert a claim of EPA system outage for failure to timely comply with the reporting requirement. To assert a claim of EPA system outage, you must meet the requirements outlined in paragraphs (d)(3)(i) through (vii) of this section.

(i) You must have been or will be precluded from accessing CEDRI and submitting a required report within the time prescribed due to an outage of either EPA's CEDRI or CDX systems.

(ii) The outage must have occurred within the period of time beginning five business days prior to the date that the submission is due.

(iii) The outage may be planned or unplanned.

(iv) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(v) You must provide to the Administrator a written description identifying:

(A) The date(s) and time(s) when CDX or CEDRI was accessed and the system was unavailable;

(B) A rationale for attributing the delay in reporting beyond the regulatory deadline to EPA system outage;

(C) Measures taken or to be taken to minimize the delay in reporting; and

(D) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(vi) The decision to accept the claim of EPA system outage and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(vii) In any circumstance, the report must be submitted electronically as soon as possible after the outage is resolved.

(4) If you are required to electronically submit a report through CEDRI in EPA's CDX, you may assert a claim of force majeure for failure to timely comply with the reporting requirement. To assert a claim of force majeure, you must meet the requirements outlined in paragraphs (d)(4)(i) through (v) of this section.

(i) You may submit a claim if a force majeure event is about to occur, occurs, or has occurred or there are lingering effects from such an event within the period of time beginning five business days prior to the date the submission is due. For the purposes of this section, a force majeure event is defined as an event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevents you from complying with the requirement to submit a report electronically within the time period prescribed. Examples of such events are acts of nature (*e.g.*, hurricanes, earthquakes, or floods), acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility (*e.g.*, large scale power outage).

(ii) You must submit the notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(iii) You must provide to the Administrator:

(A) A written description of the force majeure event;

(B) A rationale for attributing the delay in reporting beyond the regulatory deadline to the force majeure event;

(C) Measures taken or to be taken to minimize the delay in reporting; and

(D) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(iv) The decision to accept the claim of force majeure and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(v) In any circumstance, the reporting must occur as soon as possible after the force majeure event occurs.

9. Section 63.4730 is amended by:

- a. Revising paragraph (c)(3) and paragraph (k) introductory text;
- b. Redesignating paragraphs (k)(1) through (4) as paragraphs (k)(1)(i) through (iv);
- c. Adding paragraph (k)(1) introductory text and paragraph (k)(2);
- d. Redesignating paragraphs (k)(5)(i) through (iii) as paragraphs (k)(1)(v)(A) through (C);
- e. Redesignating paragraph (k)(5) introductory text as paragraph (k)(1)(v) introductory text and revising it;
- f. Redesignating paragraphs (k)(6)(i) and (ii) as paragraphs (k)(1)(vi)(A) and (B);
- g. Redesignating paragraph (k)(6) introductory text as paragraph (k)(1)(vi) introductory text and revising it; and
- h. Redesignating paragraphs (k)(7) and (8) as paragraphs (k)(1)(vii) and (viii).

The revisions and additions read as follows:

**§63.4730 What records must I keep?**

\* \* \* \* \*

(c) \* \* \*

(3) For the emission rate without add-on controls option, a record of the calculation of the total mass of organic HAP emissions for the coatings, thinners, and cleaning materials used each month, using Equations 1, 1A (or 1A-alt) through 1C, and 2 of §63.4751; and, if applicable, the calculation used to determine mass of organic HAP in waste materials according to §63.4751(e)(4); the calculation of the total volume of coating solids used each month, using Equation 2 of §63.4751; and the calculation of each 12-month organic HAP emission rate, using Equation 3 of §63.4751.

\* \* \* \* \*

(k) If you use the emission rate with add-on controls option, you must keep the records specified in paragraphs (k)(1) through (2) of this section.

(1) For existing sources, before **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**:

\* \* \* \* \*

(v) For each capture system that is not a PTE, the data and documentation you used to determine capture efficiency according to the requirements specified in §§63.4764 and 63.4765(b) through (e), including the records specified in paragraphs (k)(1)(v)(A) through (C) of this section that apply to you.

\* \* \* \* \*

(vi) The records specified in paragraphs (k)(1)(vi)(A) and (B) of this section for each add-on control device organic HAP destruction or removal efficiency determination as specified in §63.4766.

\* \* \* \* \*

(2) After **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]** for new and reconstructed sources, and on and after **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]** for existing sources:

(i) The records required to show continuous compliance with each operating limit specified in Table 3 to this subpart that applies to you.

(ii) For each capture system that is a PTE, the data and documentation you used to support a determination that the capture system meets the criteria in Method 204 of appendix M

to 40 CFR part 51 for a PTE and has a capture efficiency of 100 percent, as specified in §63.4765(a).

(iii) For each capture system that is not a PTE, the data and documentation you used to determine capture efficiency according to the requirements specified in §§63.4764 and 63.4765(b) through (e), including the records specified in paragraphs (k)(2)(iii)(A) through (C) of this section that apply to you.

(A) *Records for a liquid-to-uncaptured-gas protocol using a temporary total enclosure or building enclosure.* Records of the mass of total volatile hydrocarbon (TVH) as measured by Method 204A or F of appendix M to 40 CFR part 51 for each material used in the coating operation, and the total TVH for all materials used during each capture efficiency test run, including a copy of the test report. Records of the mass of TVH emissions not captured by the capture system that exited the temporary total enclosure or building enclosure during each capture efficiency test run as measured by Method 204D or E of appendix M to 40 CFR part 51, including a copy of the test report. Records documenting that the enclosure used for the capture efficiency test met the criteria in Method 204 of appendix M to 40 CFR part 51 for either a temporary total enclosure or a building enclosure.

(B) *Records for a gas-to-gas protocol using a temporary total enclosure or a building enclosure.* Records of the mass of TVH emissions captured by the emission capture system as measured by Method 204B or C of appendix M to 40 CFR part 51 at the inlet to the add-on control device, including a copy of the test report. Records of the mass of TVH emissions not captured by the capture system that exited the temporary total enclosure or building enclosure during each capture efficiency test run as measured by Method 204D or E of appendix M to 40 CFR part 51, including a copy of the test report. Records documenting that the enclosure used for

the capture efficiency test met the criteria in Method 204 of appendix M to 40 CFR part 51 for either a temporary total enclosure or a building enclosure.

(C) *Records for an alternative protocol.* Records needed to document a capture efficiency determination using an alternative method or protocol as specified in §63.4765(e), if applicable.

(iv) The records specified in paragraphs (k)(2)(iv)(A) and (B) of this section for each add-on control device organic HAP destruction or removal efficiency determination as specified in §63.4766.

(A) Records of each add-on control device performance test conducted according to §§63.4764 and 63.4766.

(B) Records of the coating operation conditions during the add-on control device performance test showing that the performance test was conducted under representative operating conditions.

(v) Records of the data and calculations you used to establish the emission capture and add-on control device operating limits as specified in §63.4767 and to document compliance with the operating limits as specified in Table 3 to this subpart.

(vi) A record of the work practice plan required by §63.4693, and documentation that you are implementing the plan on a continuous basis.

10. Section 63.4741 is amended by revising:

- a. Paragraph (a)(2);
- b. The subject heading and first sentence of paragraph (b)(1);
- c. The defined terms “ $m_{\text{volatiles}}$ ” and “ $D_{\text{avg}}$ ” in Equation 1 in paragraph (b)(3) introductory text; and
- d. Paragraph (c).

The revisions read as follows:

**§63.4741 How do I demonstrate initial compliance with the emission limitations?**

\* \* \* \* \*

(a) \* \* \*

(2) *Method 24 (appendix A-7 to 40 CFR part 60)*. For coatings, you may use Method 24 to determine the mass fraction of nonaqueous volatile matter and use that value as a substitute for mass fraction of organic HAP. (Note: Method 24 is not appropriate for those coatings with a water content that would result in an effective detection limit greater than the applicable emission limit.) One of the voluntary consensus standards in paragraphs (a)(2)(i) through (iv) may be used as an alternative to using Method 24.

(i) ASTM Method D2111-10 (Reapproved 2015), “Standard Test Methods for Specific Gravity and Density of Halogenated Organic Solvents and Their Admixtures,” (incorporated by reference, see §63.14);

(ii) ASTM Method D2369-10 (Reapproved 2015)<sup>e</sup>, “Standard Test Method for Volatile Content of Coatings,” (incorporated by reference, see §63.14);

(iii) ASTM Method D2697-03 (Reapproved 2014), “Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings,” (incorporated by reference, see §63.14);  
and

(iv) ASTM Method D6093-97 (Reapproved 2016), “Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer,” (incorporated by reference, see §63.14).

\* \* \* \* \*

(b) \* \* \*



(1) *ASTM Method D2697-03 (Reapproved 2014) or D6093-97 (Reapproved 2016)*. You may use ASTM Method D2697-03 (Reapproved 2014), “Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings” (incorporated by reference, see §63.14), or D6093-97 (Reapproved 2016), “Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer” (incorporated by reference, see §63.14), to determine the volume fraction of coating solids for each coating. \* \* \*

\* \* \* \* \*

(3) \* \* \*

$m_{\text{volatiles}}$  = Total volatile matter content of the coating, including HAP, volatile organic compounds (VOC), water, and exempt compounds, determined according to Method 24 in appendix A-7 of 40 CFR part 60, grams volatile matter per liter coating.

$D_{\text{avg}}$  = Average density of volatile matter in the coating, grams volatile matter per liter volatile matter, determined from test results using ASTM Method D1475-13, “Standard Test Method for Density of Liquid Coatings, Inks, and Related Products,” (incorporated by reference, see §63.14), information from the supplier or manufacturer of the material, or reference sources providing density or specific gravity data for pure materials. If there is disagreement between ASTM Method D1475-13 test results and other information sources, the test results will take precedence.

(c) *Determine the density of each coating.* Determine the density of each coating used during the compliance period from test results using ASTM Method D1475-13, “Standard Test Method for Density of Liquid Coatings, Inks, and Related Products,” (incorporated by reference, see §63.14), or information from the supplier or manufacturer of the material. If there is

disagreement between ASTM Method D1475-13 test results and the supplier's or manufacturer's information, the test results will take precedence.

\* \* \* \* \*

11. Section 63.4751 is amended by:

- a. Revising paragraph (c);
- b. Revising the defined term “A” in Equation 1 in of paragraph (e) introductory text; and
- c. Adding paragraph (i).

The revisions and addition read as follows:

**§63.4751 How do I demonstrate initial compliance with the emission limitations?**

\* \* \* \* \*

(c) *Determine the density of each material.* Determine the density of each coating, thinner, and cleaning material used during each month from test results using ASTM Method D1475-13 (incorporated by reference, see §63.14), information from the supplier or manufacturer of the material, or reference sources providing density or specific gravity data for pure materials. If there is disagreement between ASTM Method D1475-13 test results and such other information sources, the test results will take precedence.

\* \* \* \* \*

(e) \* \* \*

A = Total mass of organic HAP in the coatings used during the month, grams, as calculated in Equation 1A (or 1A-alt) of this section.

\* \* \* \* \*

(i) *Alternative compliance demonstration.* As an alternative to paragraph (h) of this section, you may demonstrate initial compliance by identifying each organic HAP component in

the coating(s) and conducting a performance test using Method 320 of appendix A to 40 CFR part 63 or NCASI Method ISS/FP A105.01 (incorporated by reference in §63.14) (for formaldehyde) or Method 326 of appendix A to 40 CFR part 63 (for isocyanates) to obtain an organic HAP emission factor (EF). The voluntary consensus standard ASTM D6348–03 (Reapproved 2010) (incorporated by reference, see §63.14) may be used as an alternative to using Method 320 under the conditions specified in paragraphs (i)(4)(i) and (ii) of this section.

(1) You must also calculate the mass of organic HAP emitted from the coatings used during the month using Equation 1A-alt of this section:

$$A = \sum_{i=1}^m (Vol_{c,i})(D_{c,i})(W_{c,i})(EF_{c,i}) \quad (Eq. 1A - alt)$$

Where:

A = Total mass of organic HAP in the coatings used during the month, grams.

Vol<sub>c,i</sub> = Total volume of coating, i, used during the month, liters.

D<sub>c,i</sub> = Density of coating, i, grams coating per liter of coatings.

W<sub>c,i</sub> = Mass fraction of organic HAP in coating, i, grams organic HAP per gram coating.

EF<sub>c,i</sub> = Organic HAP emission factor (three-run average from performance testing, evaluated as proportion of mass organic HAP emitted to mass of organic HAP in the coatings used during the performance test).

m = Number of different coatings used during the month.

(2) Calculate the organic HAP emission rate for the 12-month compliance period, grams organic HAP per liter coating solids used, using Equation 3 of this section.

(3) The organic HAP emission rate for the initial 12-month compliance period, calculated using Equation 3 of this section, must be less than or equal to the applicable emission limit in §63.4690. You must keep all records as required by §§63.4730 and 63.4731. As part of the

Notification of Compliance Status required by §63.4710, you must identify the coating operation(s) for which you used the emission rate without add-on controls option and submit a statement that the coating operation(s) was (were) in compliance with the emission limitations during the initial compliance period because the organic HAP emission rate was less than or equal to the applicable emission limit in §63.4690, determined according to this section.

(4) If ASTM D6348-03 (Reapproved 2010) is used, the conditions specified in paragraphs (i)(4)(i) and (ii) must be met.

(i) Test plan preparation and implementation in the Annexes to ASTM D6348–03 (Reapproved 2010), sections A1 through A8 are mandatory.

(ii) In ASTM D6348–03 (Reapproved 2010) Annex A5 (Analyte Spiking Technique), the percent (%) R must be determined for each target analyte (Equation A5.5 of ASTM D6348–03). In order for the test data to be acceptable for a compound, %R must be between 70 and 130 percent. If the %R value does not meet this criterion for a target compound, the test data are not acceptable for that compound, and the test must be repeated for that analyte following adjustment of the sampling and/or analytical procedure before the retest. The %R value for each compound must be reported in the test report, and all field measurements must be corrected with the calculated %R value for that compound using the following equation: Reported Result = (Measured Concentration in the Stack  $\times$  100)/%R.

12. Section 63.4752 is amended by adding paragraph (e) to read as follows:

**§63.4752 How do I demonstrate continuous compliance with the emission limitations?**

\* \* \* \* \*

(e) If you use the alternative compliance demonstration described in §63.4751(i), you must identify each organic HAP component in the coating(s) and conduct a performance test

every 5 years to obtain an organic HAP emission factor (EF). You must use the following methods, as appropriate: Method 320 of appendix A to 40 CFR part 63 or NCASI Method ISS/FP A105.01 (incorporated by reference, see §63.14) (for formaldehyde) or Method 326 of appendix A to 40 CFR part 63 (for isocyanates). The voluntary consensus standard ASTM D6348–03 (Reapproved 2010) (incorporated by reference, see §63.14) may be used as an alternative to using Method 320 under the conditions specified in §63.4751(i)(4)(i) and (ii).

13. Section 63.4761 is amended by revising paragraph (j)(3) to read as follows:

**§63.4761 How do I demonstrate initial compliance?**

\* \* \* \* \*

(j) \* \* \*

(3) Determine the mass fraction of volatile organic matter for each coating, thinner, and cleaning material used in the coating operation controlled by the solvent recovery system during the month, grams volatile organic matter per gram coating. You may determine the volatile organic matter mass fraction using Method 24 of 40 CFR part 60, appendix A-7, one of the voluntary consensus standards specified in §63.4741(a)(2)(i) through (iv), or an EPA approved alternative method, or you may use information provided by the manufacturer or supplier of the coating. In the event of any inconsistency between information provided by the manufacturer or supplier and the results of Method 24 of 40 CFR part 60, appendix A-7, or an approved alternative method, the test method results will take precedence unless after consultation, a regulated source could demonstrate to the satisfaction of the enforcement agency that the formulation data were correct.

\* \* \* \* \*

14. Section 63.4763 is amended by revising paragraph (h) to read as follows:

**§63.4763 How do I demonstrate continuous compliance with the emission limitations?**

\*\*\*\*\*

(h) For existing sources, before [INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], consistent with §§63.6(e) and 63.7(e)(1), deviations that occur during a period of SSM of the emission capture system, add-on control device, or coating operation that may affect emission capture or control device efficiency are not violations if you demonstrate to the Administrator's satisfaction that you were operating in accordance with §63.6(e)(1). The Administrator will determine whether deviations that occur during a period you identify as an SSM are violations, according to the provisions in §63.6(e).

\* \* \* \* \*

15. Section 63.4764 is amended by revising paragraphs (a)(1) and (2) to read as follows:

**§63.4764 What are the general requirements for performance tests?**

(a) \* \* \*

(1) *Representative coating operation operating conditions.* You must conduct the performance test under representative operating conditions for the coating operation. Operations during periods of startup, shutdown, and nonoperation do not constitute representative conditions. You may not conduct performance tests during periods of malfunction. You must record the process information that is necessary to document operating conditions during the test and explain why the conditions represent normal operation. Upon request, you shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

(2) *Representative emission capture system and add-on control device operating conditions.* You must conduct the performance test when the emission capture system and add-on control device are operating at a representative flow rate, and the add-on control device is

operating at a representative inlet concentration. Representative conditions exclude periods of startup and shutdown. You may not conduct performance tests during periods of malfunction. You must record information that is necessary to document emission capture system and add-on control device operating conditions during the test and explain why the conditions represent normal operation.

\* \* \* \* \*

16. Section 63.4766 is amended by revising paragraphs (a)(1) through (4), (b), (d), and (f) to read as follows:

**§63.4766 How do I determine the add-on control device emission destruction or removal efficiency?**

\* \* \* \* \*

(a) \* \* \*

(1) Use Method 1 or 1A of appendix A-1 to 40 CFR part 60, as appropriate, to select sampling sites and velocity traverse points.

(2) Use Method 2, 2A, 2C, 2D, or 2F of appendix A-1 to 40 CFR part 60, or Method 2G of appendix A-2 to 40 CFR part 60, as appropriate, to measure gas volumetric flow rate.

(3) Use Method 3, 3A, or 3B of appendix A-2 to 40 CFR part 60, as appropriate, for gas analysis to determine dry molecular weight. You may also use as an alternative to Method 3B, the manual method for measuring the oxygen, carbon dioxide, and carbon monoxide content of exhaust gas in ANSI/ASME PTC 19.10-1981, “Flue and Exhaust Gas Analyses [Part 10, Instruments and Apparatus]” (incorporated by reference, see §63.14).

(4) Use Method 4 of appendix A-3 to 40 CFR part 60 to determine stack gas moisture.

\* \* \* \* \*

(b) Measure total gaseous organic mass emissions as carbon at the inlet and outlet of the add-on control device simultaneously, using Method 25 or 25A of appendix A-7 to 40 CFR part 60, and Method 320 or 326 of appendix A to 40 CFR part 63, as specified in paragraphs (b)(1) through (5) of this section. The voluntary consensus standard ASTM D6348–03 (Reapproved 2010) (incorporated by reference in §63.14) may be used as an alternative to using Method 320 if the conditions specified in §63.4751(i)(4)(i) and (ii) are met. You must use the same method for both the inlet and outlet measurements.

(1) Use Method 25 of appendix A-7 to 40 CFR part 60 if the add-on control device is an oxidizer, and you expect the total gaseous organic concentration as carbon to be more than 50 parts per million (ppm) at the control device outlet.

(2) Use Method 25A of appendix A-7 to 40 CFR part 60 if the add-on control device is an oxidizer, and you expect the total gaseous organic concentration as carbon to be 50 ppm or less at the control device outlet.

(3) Use Method 25A of appendix A-7 to 40 CFR part 60 if the add-on control device is not an oxidizer.

(4) If Method 25A is used, and if formaldehyde is a major organic HAP component of the surface coating exhaust stream, use Method 320 of appendix A to 40 CFR part 63 or NCASI Method ISS/FP A105.01 (incorporated by reference in §63.14) or ASTM D6348-03 (Reapproved 2010) (incorporated by reference in §63.14) to determine formaldehyde concentration.

(5) In addition to Method 25 or 25A, use Method 326 of appendix A to 40 CFR part 63 if isocyanate is a major organic HAP component of the surface coating exhaust stream.

\* \* \* \* \*



(d) For each test run, determine the total gaseous organic emissions mass flow rates for the inlet and the outlet of the add-on control device, using Equation 1 of this section. If there is more than one inlet or outlet to the add-on control device, you must calculate the total gaseous organic mass flow rate using Equation 1 of this section for each inlet and each outlet and then total all of the inlet emissions and total all of the outlet emissions. The mass emission rates for formaldehyde and individual isocyanate must be determined separately.

$$M_f = Q_{sd} C_c MW(41.6)(10^{-6}) \quad (Eq.1)$$

Where:

$M_f$  = Total gaseous organic emissions mass flow rate, grams per hour (h).

MW = Molecular weight of analyte of interest (12 for Method 25 and 25A results).

$C_c$  = Concentration of organic compounds in the vent gas (as carbon if determined by Method 25 or Method 25A), parts per million by volume (ppmv), dry basis.

$Q_{sd}$  = Volumetric flow rate of gases entering or exiting the add-on control device, as determined by Method 2, 2A, 2C, 2D, 2F, or 2G, dry standard cubic meters/hour (dscm/h).

41.6 = Conversion factor for molar volume, gram-moles per cubic meter ( $\text{mol/m}^3$ ) (@ 293 Kelvin (K) and 760 millimeters of mercury (mmHg)).

\* \* \* \* \*

(f) Determine the emission destruction or removal efficiency of the add-on control device as the average of the efficiencies determined in the three test runs and calculated in Equation 2 of this section. Destruction and removal efficiency must be determined independently for formaldehyde and isocyanates.

17. Section 63.4781 is amended by revising paragraph (3) under the definition of “deviation” and revising the definition of “tileboard” to read as follows:

**§63.4781 What definitions apply to this subpart?**

\* \* \* \* \*

*Deviation* \* \* \*

(3) On and after [INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], fails to meet any emission limit, or operating limit, or work practice standard in this subpart during SSM.

\* \* \* \* \*

*Tileboard* means hardboard that meets the specifications for Class I given by the standard ANSI A135.4-2012 (incorporated by reference, see §63.14) as approved by the American National Standards Institute. The standard specifies requirements and test methods for water absorption, thickness swelling, modulus of rupture, tensile strength, surface finish, dimensions, squareness, edge straightness, and moisture content for five classes of hardboard. Tileboard is also known as Class I hardboard or tempered hardboard.

\* \* \* \* \*

18. Table 4 to Subpart QQQQ is revised to read as follows:

**Table 4 to Subpart QQQQ of Part 63—Applicability of General Provisions to Subpart QQQQ of Part 63**

You must comply with the applicable General Provisions requirements according to the following table:

Citation	Subject	Applicable to subpart QQQQ	Explanation
§63.1(a)(1)-(14)	General Applicability	Yes	
§63.1(b)(1)-(3)	Initial Applicability Determination.	Yes	Applicability to subpart QQQQ is also specified in §63.4681.
§63.1(c)(1)	Applicability After Standard Established	Yes	

<b>Citation</b>	<b>Subject</b>	<b>Applicable to subpart QQQQ</b>	<b>Explanation</b>
§63.1(c)(2)	Applicability of Permit Program for Area Sources	No	Area sources are not subject to subpart QQQQ.
§63.1(c)(3)	[Reserved]	No	
§63.1(c)(4)-(5)	Extensions and Notifications	Yes	
§63.1(d)	[Reserved]	No	
§63.1(e)	Applicability of Permit Program Before Relevant Standard is Set	Yes	
§63.2	Definitions	Yes	Additional definitions are specified in §63.4781.
§63.3(a)-(c)	Units and Abbreviations	Yes	
§63.4(a)(1)-(5)	Prohibited Activities	Yes	
§63.4(b)-(c)	Circumvention/Severability	Yes	
§63.5(a)	Construction/Reconstruction	Yes	
§63.5(b)(1)-(6)	Requirements for Existing, Newly Constructed, and Reconstructed Sources	Yes	
§63.5(c)	[Reserved]	No	
§63.5(d)	Application for Approval of Construction/Reconstruction	Yes	
§63.5(e)	Approval of Construction/Reconstruction	Yes	
§63.5(f)	Approval of Construction/Reconstruction Based on Prior State Review	Yes	
§63.6(a)	Compliance With Standards and Maintenance Requirements—Applicability	Yes	
§63.6(b)(1)-(7)	Compliance Dates for New and Reconstructed Sources	Yes	§63.4683 specifies compliance dates.
§63.6(c)(1)-(5)	Compliance Dates for Existing Sources	Yes	§63.4683 specifies compliance dates.

<b>Citation</b>	<b>Subject</b>	<b>Applicable to subpart QQQQ</b>	<b>Explanation</b>
§63.6(d)	[Reserved]	No	
§63.6(e)(1)(i)	General Duty to Minimize Emissions	No	See §63.4700(b) for general duty requirement.
§63.6(e)(1)(ii)	Requirement to Correct Malfunctions ASAP	No	
§63.6(e)(1)(iii)	Operation and Maintenance Requirements Enforceable Independent of Emissions Limitations	Yes	
§63.6(e)(2)	[Reserved]	No	
§63.6(e)(3)	SSMP	No	
§63.6(f)(1)	Compliance Except During SSM	No	
§63.6(f)(2)-(3)	Methods for Determining Compliance	Yes	
§63.6(g)(1)-(3)	Use of an Alternative Standard	Yes	
§63.6(h)	Compliance with Opacity/Visible Emissions Standards	No	Subpart QQQQ does not establish opacity standards and does not require continuous opacity monitoring systems (COMS).
§63.6(i)(1)-(16)	Extension of Compliance	Yes	
§63.6(j)	Presidential Compliance Exemption	Yes	
§63.7(a)(1)	Performance Test Requirements—Applicability	Yes	Applies to all affected sources. Additional requirements for performance testing are specified in §§63.4751, 63.4752, 63.4764, 63.4765, and 63.4766.
§63.7(a)(2)	Performance Test Requirements—Dates	Yes	Applies only to performance tests for

<b>Citation</b>	<b>Subject</b>	<b>Applicable to subpart QQQQ</b>	<b>Explanation</b>
			capture system and control device efficiency at sources using these to comply with the standard. §63.4760 specifies the schedule for performance test requirements that are earlier than those specified in §63.7(a)(2).
§63.7(a)(3)	Performance Tests Required By the Administrator	Yes	
§63.7(a)(4)	Notification of Delay in Performance Testing Due to Force Majeure	Yes	
§63.7(b)-(d)	Performance Test Requirements—Notification, Quality Assurance, Facilities Necessary for Safe Testing, Conditions During Test	Yes	Applies only to performance tests for capture system and add-on control device efficiency at sources using these to comply with the standard.
§63.7(e)(1)	Performance Testing	Yes	
§63.7(f)	Performance Test Requirements—Use of Alternative Test Method	Yes	Applies to all test methods except those used to determine capture system efficiency.
§63.7(g)-(h)	Performance Test Requirements—Data Analysis, Recordkeeping, Reporting, Waiver of Test	Yes	Applies only to performance tests for capture system and add-on control device efficiency at sources using these to comply with the standard.
§63.8(a)(1)-(2)	Monitoring Requirements—Applicability	Yes	Applies only to monitoring of capture system and add-on control device efficiency at sources using these to comply with the standard. Additional requirements for monitoring are

<b>Citation</b>	<b>Subject</b>	<b>Applicable to subpart QQQQ</b>	<b>Explanation</b>
			specified in §63.4768.
§63.8(a)(3)	[Reserved]	No	
§63.8(a)(4)	Additional Monitoring Requirements	No	Subpart QQQQ does not have monitoring requirements for flares.
§63.8(b)	Conduct of Monitoring	Yes	
§63.8(c)(1)	Continuous Monitoring System (CMS) Operation and Maintenance	Yes	Applies only to monitoring of capture system and add-on control device efficiency at sources using these to comply with the standard. Additional requirements for CMS operations and maintenance are specified in §63.4768.
§63.8(c)(1)(i)	General Duty to Minimize Emissions and CMS Operation	No	
§63.8(c)(1)(ii)	Operation and Maintenance of CMS.	Yes	
§63.8(c)(1)(iii)	Requirement to Develop SSM Plan for CMS	No	
§63.8(c)(2)-(3)	Monitoring System Installation	Yes	
§63.8(c)(4)	CMSs	No	§63.4768 specifies the requirements for the operation of CMS for capture systems and add-on control devices at sources using these to comply.
§63.8(c)(5)	COMS	No	Subpart QQQQ does not have opacity for visible emission standards.
§63.8(c)(6)	CMS Requirements	Yes	§63.4768 specifies the

<b>Citation</b>	<b>Subject</b>	<b>Applicable to subpart QQQQ</b>	<b>Explanation</b>
			requirements for monitoring systems for capture systems and add-on control devices at sources using these to comply.
§63.8(c)(7)	CMS Out-of-Control Periods	Yes	
§63.8(c)(8)	CMS Out-of-Control Periods Reporting	No	§63.4720 requires reporting of CMS out-of-control periods.
§63.8(d)-(e)	Quality Control Program and CMS Performance Evaluation	No	Subpart QQQQ does not require the use of continuous emissions monitoring systems.
§63.8(f)(1)-(5)	Use of an Alternative Monitoring Method	Yes	
§63.8(f)(6)	Alternative to Relative Accuracy Test	No	Subpart QQQQ does not require the use of continuous emissions monitoring systems.
§63.8(g)(1)-(5)	Data Reduction	No	§§63.4767 and 63.4768 specify monitoring data reduction.
§63.9(a)-(d)	Notification Requirements	Yes	
§63.9(e)	Notification of Performance Test	Yes	Applies only to capture system and add-on control device performance tests at sources using these to comply with the standard.
§63.9(f)	Notification of Visible Emissions/Opacity Test	No	Subpart QQQQ does not have opacity or visible emission standards.
§63.9(g)(1)-(3)	Additional Notifications When Using CMS	No	Subpart QQQQ does not require the use of continuous emissions monitoring systems.

<b>Citation</b>	<b>Subject</b>	<b>Applicable to subpart QQQQ</b>	<b>Explanation</b>
§63.9(h)	Notification of Compliance Status	Yes	§63.4710 specifies the dates for submitting the Notification of Compliance Status.
§63.9(i)	Adjustment of Submittal Deadlines	Yes	
§63.9(j)	Change in Previous Information	Yes	
§63.10(a)	Recordkeeping/Reporting—Applicability and General Information	Yes	
§63.10(b)(1)	General Recordkeeping Requirements	Yes	Additional requirements are specified in §§63.4730 and 63.4731.
§63.10(b)(2)(i)-(ii)	Recordkeeping of Occurrence and Duration of Startups and Shutdowns	No	
§63.10(b)(2)(iii)	Recordkeeping Relevant to CMS	Yes	
§63.10(b)(2)(iv)-(v)	Recordkeeping Relevant to SSM	No	
§63.10(b)(2)(vi)-(xi)	Recordkeeping for CMS Malfunctions	Yes	
§63.10(b)(2)(xii)	Records	Yes	
§63.10(b)(2)(xiii)		No	Subpart QQQQ does not require the use of continuous emissions monitoring systems.
§63.10(b)(2)(xiv)		Yes	
§63.10(b)(3)	Recordkeeping Requirements for Applicability Determinations	Yes	
§63.10(c)(1)-(6)	Additional Recordkeeping Requirements for Sources	Yes	



<b>Citation</b>	<b>Subject</b>	<b>Applicable to subpart QQQQ</b>	<b>Explanation</b>
	with CMS		
§63.10(c)(7)-(8)		No	The same records are required in §63.4720(a)(7).
§63.10(c)(9)-(14)		Yes	
§63.10(c)(15)	Use of SSM Plan	No	
§63.10(d)(1)	General Reporting Requirements	Yes	Additional requirements are specified in §63.4720.
§63.10(d)(2)	Report of Performance Test Results	Yes	Additional requirements are specified in §63.4720(b).
§63.10(d)(3)	Reporting Opacity or Visible Emissions Observations	No	Subpart QQQQ does not require opacity or visible emissions observations.
§63.10(d)(4)	Progress Reports for Sources With Compliance Extensions	Yes	
§63.10(d)(5)	SSM Reports	No	Malfunctions shall be reported based on compliance option under §63.4720(a)(5-7).
§63.10(e)(1)-(2)	Additional CMS Reports	No	Subpart QQQQ does not require the use of continuous emissions monitoring systems.
§63.10(e)(3)	Excess Emissions/CMS Performance Reports	No	§63.4720(b) specifies the contents of periodic compliance reports.
§63.10(e)(4)	COMS Data Reports	No	Subpart QQQQ does not specify requirements for opacity or COMS.
§63.10(f)	Recordkeeping/Reporting Waiver	Yes	
§63.11	Control Device Requirements/Flares	No	Subpart QQQQ does not specify use of flares for

<b>Citation</b>	<b>Subject</b>	<b>Applicable to subpart QQQQ</b>	<b>Explanation</b>
			compliance.
§63.12	State Authority and Delegations	Yes	
§63.13	Addresses	Yes	
§63.14	Incorporation by Reference	Yes	Test Methods ANSI A135.4-2012, ANSI/ASME PTC 19.10-1981, Part 10, ASTM D1475-13, ASTM D2111-10 (Reapproved 2015), ASTM D2369-10 (Reapproved 2015) <sup>e</sup> , ASTM D2697-03 (Reapproved 2014), ASTM D4840-99 (2018) <sup>e</sup> , ASTM D6093-97 (Reapproved 2016), ASTM D6348-03 (Reapproved 2010) and NCASI Method ISS/FP A105.01 (incorporated by reference, see §63.14).
§63.15	Availability of Information/Confidentiality	Yes	
§63.16	Requirements for Performance Track Member Facilities	Yes	

19. Appendix A to part 63 is amended by adding Method 326 in numerical order to read as follows:

**Appendix A to Part 63—Test Methods**

\* \* \* \* \*

**Method 326 -- Method for Determination of Isocyanates in Stationary Source Emissions**

## 1.0 Scope and Application

This method is applicable to the collection and analysis of isocyanate compounds from the emissions associated with manufacturing processes. This method is not inclusive with respect to specifications (*e.g.*, equipment and supplies) and sampling procedures essential to its performance. Some material is incorporated by reference from other EPA methods. Therefore, to obtain reliable results, persons using this method should have a thorough knowledge of at least Method 1, Method 2, Method 3, and Method 5 found in Appendices A-1, A-2, and A-3 in Part 60 of this title.

1.1. Analytes. This method is designed to determine the mass emission of isocyanates being emitted from manufacturing processes. The following is a table (Table 1-1) of the isocyanates and the manufacturing process at which the method has been evaluated:

**Table 326-1—Analytes**

<b>Compound's Name</b>	<b>CAS No.</b>	<b>Detection Limit (ng/m<sup>3</sup>)<sup>a</sup></b>	<b>Manufacturing Process</b>
2,4-Toluene Diisocyanate (TDI)	584-84-9	106	Flexible Foam Production
1,6-Hexamethylene Diisocyanate (HDI)	822-06-0	396	Paint Spray Booth
Methylene Diphenyl Diisocyanate (MDI)	101-68-8	112	Pressed Board Production
Methyl Isocyanate(MI)	624-83-0	228	Not used in production

<sup>a</sup> Estimated detection limits are based on a sample volume of 1 m<sup>3</sup> and a 10-ml sample extraction volume.

1.2 Applicability. Method 326 is a method designed for determining compliance with National Emission Standards for Hazardous Air Pollutants (NESHAP). Method 326 may also be specified by New Source Performance Standards (NSPS), State Implementation Plans (SIPs), and operating permits that require measurement of isocyanates in stationary source emissions, to determine compliance with an applicable emission standard or limit.

1.3 Data Quality Objectives (DQO). The principal objective is to ensure the accuracy of the data at the actual emissions levels and in the actual emissions matrix encountered. To meet this objective, method performance tests are required and NIST-traceable calibration standards must be used.

## *2.0 Summary of Method*

2.1 Gaseous and/or aerosol isocyanates are withdrawn from an emission source at an isokinetic sampling rate and are collected in a multicomponent sampling train. The primary components of the train include a heated probe, three impingers containing derivatizing reagent in toluene, an empty impinger, an impinger containing charcoal, and an impinger containing silica gel.

2.2 The liquid impinger contents are recovered, concentrated to dryness under vacuum, brought to volume with acetonitrile (ACN) and analyzed with a high pressure liquid chromatograph (HPLC).

## *3.0 Definitions [Reserved]*

## *4.0 Interferences*

4.1 The greatest potential for interference comes from an impurity in the derivatizing reagent, 1-(2-pyridyl)piperazine (1,2-PP). This compound may interfere with the resolution of MI from the peak attributed to unreacted 1,2-PP.

4.2 Other interferences that could result in positive or negative bias are (1) alcohols that could compete with the 1,2-PP for reaction with an isocyanate and (2) other compounds that may co-elute with one or more of the derivatized isocyanates.

4.3 Method interferences may be caused by contaminants in solvents, reagents, glassware, and other sample processing hardware. All these materials must be routinely shown to

be free from interferences under conditions of the analysis by preparing and analyzing laboratory method (or reagent) blanks.

4.3.1 Glassware must be cleaned thoroughly before using. The glassware should be washed with laboratory detergent in hot water followed by rinsing with tap water and distilled water. The glassware may be dried by baking in a glassware oven at 400 °C for at least one hour. After the glassware has cooled, it should be rinsed three times with methylene chloride and three times with acetonitrile. Volumetric glassware should not be heated to 400 °C. Instead, after washing and rinsing, volumetric glassware may be rinsed with acetonitrile followed by methylene chloride and allowed to dry in air.

4.3.2 The use of high purity reagents and solvents helps to reduce interference problems in sample analysis.

## *5.0 Safety*

5.1 Organizations performing this method are responsible for maintaining a current awareness file of Occupational Safety and Health Administration (OSHA) regulations regarding safe handling of the chemicals specified in this method. A reference file of material safety data sheets should also be made available to all personnel involved in performing the method. Additional references to laboratory safety are available.

## *6.0 Equipment and Supplies*

6.1 Sample Collection. A schematic of the sampling train used in this method is shown in Figure 207-1. This sampling train configuration is adapted from Method 5 procedures, and, as such, most of the required equipment is identical to that used in Method 5 determinations. The only new component required is a condenser.

6.1.1 Probe Nozzle. Borosilicate or quartz glass; constructed and calibrated according to Method 5, sections 6.1.1.1 and 10.1, and coupled to the probe liner using a Teflon union; a stainless steel nut is recommended for this union. When the stack temperature exceeds 210 °C (410 °F), a one-piece glass nozzle/liner assembly must be used.

6.1.2 Probe Liner. Same as Method 5, section 6.1.1.2, except metal liners shall not be used. Water-cooling of the stainless steel sheath is recommended at temperatures exceeding 500 °C (932 °F). Teflon may be used in limited applications where the minimum stack temperature exceeds 120 °C (250 °F) but never exceeds the temperature where Teflon is estimated to become unstable [approximately 210 °C (410 °F)].

6.1.3 Pitot Tube, Differential Pressure Gauge, Filter Heating System, Metering System, Barometer, Gas Density Determination Equipment. Same as Method 5, sections 6.1.1.3, 6.1.1.4, 6.1.1.6, 6.1.1.9, 6.1.2, and 6.1.3.

6.1.4 Impinger Train. Glass impingers are connected in series with leak-free ground-glass joints following immediately after the heated probe. The first impinger shall be of the Greenburg-Smith design with the standard tip. The remaining five impingers shall be of the modified Greenburg-Smith design, modified by replacing the tip with a 1.3-cm (1/2-in.) I.D. glass tube extending about 1.3 cm (1/2 in.) from the bottom of the outer cylinder. A water-jacketed condenser is placed between the outlet of the first impinger and the inlet to the second impinger to reduce the evaporation of toluene from the first impinger.

6.1.5 Moisture Measurement. For the purpose of calculating volumetric flow rate and isokinetic sampling, you must also collect either Method 4 in Appendix A-3 to this part or other moisture measurement methods approved by the Administrator concurrent with each Method 326 test run.

## 6.2 Sample Recovery

6.2.1 Probe and Nozzle Brushes; Polytetrafluoroethylene (PTFE) bristle brushes with stainless steel wire or PTFE handles are required. The probe brush shall have extensions constructed of stainless steel, PTFE, or inert material at least as long as the probe. The brushes shall be properly sized and shaped to brush out the probe liner and the probe nozzle.

6.2.2 Wash Bottles. Three. PTFE or glass wash bottles are recommended; polyethylene wash bottles must not be used because organic contaminants may be extracted by exposure to organic solvents used for sample recovery.

6.2.3 Glass Sample Storage Containers. Chemically resistant, borosilicate amber glass bottles, 500-mL or 1,000-mL. Bottles should be tinted to prevent the action of light on the sample. Screw-cap liners shall be either PTFE or constructed to be leak-free and resistant to chemical attack by organic recovery solvents. Narrow-mouth glass bottles have been found to leak less frequently.

6.2.4 Graduated Cylinder. To measure impinger contents to the nearest 1 ml or 1 g. Graduated cylinders shall have subdivisions not >2 mL.

6.2.5 Plastic Storage Containers. Screw-cap polypropylene or polyethylene containers to store silica gel and charcoal.

6.2.6 Funnel and Rubber Policeman. To aid in transfer of silica gel or charcoal to container (not necessary if silica gel is weighed in field).

6.2.7 Funnels. Glass, to aid in sample recovery.

## 6.3 Sample Preparation and Analysis.

The following items are required for sample analysis.

6.3.1 Rotary Evaporator. Buchii Model EL-130 or equivalent.

- 6.3.2 1000 ml Round Bottom Flask for use with a rotary evaporator.
- 6.3.3 Separatory Funnel. 500-ml or larger, with PTFE stopcock.
- 6.3.4 Glass Funnel. Short-stemmed or equivalent.
- 6.3.5 Vials. 15-ml capacity with PTFE lined caps.
- 6.3.6 Class A Volumetric Flasks. 10-ml for bringing samples to volume after concentration.
- 6.3.7 Filter Paper. Qualitative grade or equivalent.
- 6.3.8 Buchner Funnel. Porcelain with 100 mm ID or equivalent.
- 6.3.9 Erlenmeyer Flask. 500-ml with side arm and vacuum source.
- 6.3.10 HPLC with at least a binary pumping system capable of a programmed gradient.
- 6.3.11 Column Systems Column systems used to measure isocyanates must be capable of achieving separation of the target compounds from the nearest eluting compound or interferents with no more than 10 percent peak overlap.
- 6.3.12 Detector. UV detector at 254 nm. A fluorescence detector (FD) with an excitation of 240 nm and an emission at 370 nm may be also used to allow the detection of low concentrations of isocyanates in samples.
- 6.3.13 Data system for measuring peak areas and retention times.

## *7.0 Reagents and Standards*

- 7.1 Sample Collection Reagents.
- 7.1.1 Charcoal. Activated, 6-16 mesh. Used to absorb toluene vapors and prevent them from entering the metering device. Use once with each train and discard.
- 7.1.2 Silica Gel and Crushed Ice. Same as Method 5, sections 7.1.2 and 7.1.4 respectively



7.1.3 Impinger Solution. The impinger solution is prepared by mixing a known amount of 1-(2-pyridyl) piperazine (purity 99.5+ %) in toluene (HPLC grade or equivalent). The actual concentration of 1,2-PP should be approximately four times the amount needed to ensure that the capacity of the derivatizing solution is not exceeded. This amount shall be calculated from the stoichiometric relationship between 1,2-PP and the isocyanate of interest and preliminary information about the concentration of the isocyanate in the stack emissions. A concentration of 130 µg/ml of 1,2-PP in toluene can be used as a reference point. This solution shall be prepared, stored in a refrigerated area away from light, and used within ten days of preparation.

## 7.2 Sample Recovery Reagents.

7.2.1 Toluene. HPLC grade is required for sample recovery and cleanup (see NOTE to 7.2.2 below).

7.2.2 Acetonitrile. HPLC grade is required for sample recovery and cleanup. NOTE: Organic solvents stored in metal containers may have a high residue blank and should not be used. Sometimes suppliers transfer solvents from metal to glass bottles; thus blanks shall be run before field use and only solvents with a low blank value should be used.

7.3 Analysis Reagents. Reagent grade chemicals should be used in all tests. All reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.

7.3.1 Toluene,  $C_6H_5CH_3$ . HPLC Grade or equivalent.

7.3.2 Acetonitrile,  $CH_3CN$  (ACN). HPLC Grade or equivalent.

7.3.3 Methylene Chloride,  $CH_2Cl_2$ . HPLC Grade or equivalent.

7.3.4 Hexane,  $C_6H_{14}$ . HPLC Grade or equivalent.

7.3.5 Water,  $H_2O$ . HPLC Grade or equivalent.

7.3.6 Ammonium Acetate,  $\text{CH}_3\text{CO}_2\text{NH}_4$ .

7.3.7 Acetic Acid (glacial),  $\text{CH}_3\text{CO}_2\text{H}$ .

7.3.8 1-(2-Pyridyl)piperazine, (1,2-PP),  $\geq 99.5\%$  or equivalent.

7.3.9 Absorption Solution. Prepare a solution of 1-(2-pyridyl)piperazine in toluene at a concentration of 40 mg/300 ml. This solution is used for method blanks and method spikes.

7.3.10 Ammonium Acetate Buffer Solution (AAB). Prepare a solution of ammonium acetate in water at a concentration of 0.1 M by transferring 7.705 g of ammonium acetate to a 1,000 ml volumetric flask and diluting to volume with HPLC Grade water. Adjust pH to 6.2 with glacial acetic acid.

## *8.0 Sample Collection, Storage and Transport*

*Note: Because of the complexity of this method, field personnel should be trained in and experienced with the test procedures in order to obtain reliable results.*

### 8.1 Sampling

8.1.1 Preliminary Field Determinations. Same as Method 5, section 8.2.

8.1.2 Preparation of Sampling Train. Follow the general procedure given in Method 5, section 8.3.1, except for the following variations: Place 300 ml of the impinger absorbing solution in the first impinger and 200 ml each in the second and third impingers. The fourth impinger shall remain empty. The fifth and sixth impingers shall have 400 g of charcoal and 200-300 g of silica gel, respectively. Alternatively, the charcoal and silica gel may be combined in the fifth impinger. Set-up the train as in Figure 326-1. During assembly, do not use any silicone grease on ground-glass joints.

*Note: During preparation and assembly of the sampling train, keep all openings where contamination can occur covered with PTFE film or aluminum foil until just before assembly or until sampling is about to begin.*

8.1.3 Leak-Check Procedures. Follow the leak-check procedures given in Method 5, sections 8.4.2 (Pretest Leak-Check), 8.4.3 (Leak-Checks During the Sample Run), and 8.4.4 (Post-Test Leak-Check), with the exception that the pre-test leak-check is mandatory

8.1.4 Sampling Train Operation. Follow the general procedures given in Method 5, section 8.5. Turn on the condenser coil coolant recirculating pump and monitor the gas entry temperature. Ensure proper gas entry temperature before proceeding and again before any sampling is initiated. It is important that the gas entry temperature not exceed 50°C (122 °F), thus reducing the loss of toluene from the first impinger. For each run, record the data required on a data sheet such as the one shown in Method 5, Figure 5-3.

8.2 Sample Recovery. Allow the probe to cool. When the probe can be handled safely, wipe off all external particulate matter near the tip of the probe nozzle and place a cap over the tip to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling down because this will create a vacuum in the train. Before moving the sample train to the cleanup site, remove the probe from the sample train and cap the opening to the probe, being careful not to lose any condensate that might be present. Cap the impingers and transfer the probe and the impinger/condenser assembly to the cleanup area. This area should be clean and protected from the weather to reduce sample contamination or loss. Inspect the train prior to and during disassembly and record any abnormal conditions. It is not necessary to measure the volume of the impingers for the purpose of moisture determination as the method is not validated for moisture determination. Treat samples as follows:

8.2.1 Container No. 1, Probe and Impinger Numbers 1 and 2. Rinse and brush the probe/nozzle first with toluene twice and then twice again with acetonitrile and place the wash into a glass container labeled with the test run identification and "Container No. 1." When using these solvents ensure that proper ventilation is available. Quantitatively transfer the liquid from the first two impingers and the condenser into Container No. 1. Rinse the impingers and all connecting glassware twice with toluene and then twice again with acetonitrile and transfer the rinses into Container No. 1. After all components have been collected in the container, seal the container, and mark the liquid level on the bottle.

8.2.2 Container No. 2, Impingers 3 and 4. Quantitatively transfer the liquid from each impinger into a glass container labeled with the test run identification and "Container No. 2." Rinse each impinger and all connecting glassware twice with toluene and twice again with acetonitrile and transfer the rinses into Container No. 2. After all components have been collected in the container, seal the container, and mark the liquid level on the bottle.

*Note: The contents of the fifth and sixth impinger (silica gel) can be discarded.*

8.2.3 Container No. 3, Reagent Blank. Save a portion of both washing solutions (toluene/acetonitrile) used for the cleanup as a blank. Transfer 200 ml of each solution directly from the wash bottle being used and combine in a glass sample container with the test identification and "Container No. 3." Seal the container, and mark the liquid level on the bottle and add the proper label.

8.2.4 Field Train Proof Blanks. To demonstrate the cleanliness of sampling train glassware, you must prepare a full sampling train to serve as a field train proof blank just as it would be prepared for sampling. At a minimum, one complete sampling train will be assembled in the field staging area, taken to the sampling area, and leak-checked. The probe of the blank

train shall be heated during and the train will be recovered as if it were an actual test sample. No gaseous sample will be passed through the sampling train. Field blanks are recovered in the same manner as described in sections 8.2.1 and 8.2.2 and must be submitted with the field samples collected at each sampling site.

8.2.5 Field Train Spike. To demonstrate the effectiveness of the sampling train, field handling, and recovery procedures you must prepare a full sampling train to serve as a field train spike just as it would be prepared for sampling. The field spike is performed in the same manner as the field train proof blank with the additional step of adding the Field Spike Solution to the first impinger after the initial leak check. The train will be recovered as if it were an actual test sample. No gaseous sample will be passed through the sampling train. Field train spikes are recovered in the same manner as described in sections 8.2.1 and 8.2.2 and must be submitted with the samples collected for each test program.

8.3 Sample Transport Procedures. Containers must remain in an upright position at all times during shipment. Samples must also be stored at  $<4^{\circ}\text{C}$  between the time of sampling and concentration. Each sample should be extracted and concentrated within 30 days after collection and analyzed within 30 days after extraction. The extracted sample must be stored at  $4^{\circ}\text{C}$ .

8.4 Sample Custody. Proper procedures and documentation for sample chain of custody are critical to ensuring data integrity. The chain of custody procedures in ASTM D4840-99 (Reapproved 2018)<sup>e</sup> “Standard Guide for Sampling Chain-of-Custody Procedures” (incorporated by reference, see §63.14) shall be followed for all samples (including field samples and blanks).

## *9.0 Quality Control*

9.1 Sampling. Sampling Operations. The sampling quality control procedures and acceptance criteria are listed in Table 326-2 below; see also section 9.0 of Method 5.

9.2 Analysis. The analytical quality control procedures required for this method includes the analysis of the field train proof blank, field train spike, and reagent and method blanks.

Analytical quality control procedures and acceptance criteria are listed in Table 326-3 below.

9.2.1 Check for Breakthrough. Recover and determine the isocyanate(s) concentration of the last two impingers separately from the first two impingers.

9.2.2 Field Train Proof Blank. Field blanks must be submitted with the samples collected at each sampling site.

9.2.3 Reagent Blank and Field Train Spike. At least one reagent blank and a field train spike must be submitted with the samples collected for each test program.

9.2.4 Determination of Method Detection Limit. Based on your instrument's sensitivity and linearity, determine the calibration concentrations or masses that make up a representative low level calibration range. The MDL must be determined at least annually for the analytical system using an MDL study such as that found in section 15.0 to Method 301 of appendix A to part 63 of this chapter.

**Table 326-2—Sampling Quality Assurance and Quality Control**

<b>QA/QC Criteria</b>	<b>Acceptance Criteria</b>	<b>Frequency</b>	<b>Consequence if not met</b>
Sampling Equipment Leak Checks	$\leq 0.00057$ m <sup>3</sup> /min (0.020 cfm) or 4% of sampling rate, whichever is less.	Prior to, during (optional) and at the completion to sampling	Prior to: Repair and repeat calibration. During/Completion: None, testing should be considered invalid.
Dry Gas Meter Calibration – Pre-Test (individual correction factor – $Y_i$ )	within $\pm 2\%$ of average factor (individual)	Pre-test	Repeat calibration point
Dry Gas Meter Calibration – Pre-Test (average correction factor – $Y_c$ )	$1.00 \pm 1\%$	Pre-test	Adjust the dry gas meter and recalibrate.
Dry Gas Meter	Average dry gas	Each Test	Adjust sample

Calibration – Post-test	meter calibration factor agrees with $\pm 5\%$ $Y_c$		volumes using the factor that gives the smallest volume.
Temperature sensor calibration	Absolute temperature measures by sensor within $\pm 1.5\%$ of a reference sensor	Prior to initial use and before each test thereafter	Recalibrate; sensor may not be used until specification is met.
Barometer calibration	Absolute pressure measured by instrument within $\pm 10$ mm Hg of reading with a mercury barometer or NIST traceable barometer	Prior to initial use and before each test thereafter	Recalibrate; instrument may not be used until specification is met.

**Table 326-3—Analytical Quality Assurance and Quality Control**

<b>QA/QC Criteria</b>	<b>Acceptance Criteria</b>	<b>Frequency</b>	<b>Consequence if not met</b>
Calibration – Method Blanks	<5% level of expected analyte	Each analytical method blank	Locate source of contamination; reanalyze
Calibration – Calibration Points	At least six calibration point bracketing the expected range of analysis	Each analytical batch	Incorporate additional calibration points to meet criteria
Calibration – Linearity	Correlation coefficient >0.995	Each analytical batch	Verify integration, reintegrate. If necessary, recalibrate
Calibration – secondary standard verification	Within $\pm 10\%$ of true value	After each calibration	Repeat secondary standard verification, recalibrate if necessary
Calibration – continual calibration verification	Within $\pm 10\%$ of true value	Daily and after every ten samples	Invalidate previous ten sample analysis, recalibrate and repeat calibration, reanalyze samples until successful.
Sample Analysis	Within the valid calibration range	Each sample	Invalidate the sample if greater than the calibration range and dilute the sample so that it is within the calibration range.

			Appropriately flag any value below the calibration range.
Replicate Samples	Within $\pm 10\%$ of RPD	Each sample	Evaluate integrations and repeat sample analysis as necessary
Field Train Proof Blank	$\leq 10\%$ level of expected analyte	Each test program	Evaluate source of contamination.
Field Train Spike	Within $\pm 30\%$ of true value	Each test program	Evaluate performance of the method and consider invalidating results.
Breakthrough	Final two impingers Mass collected is $>5\%$ of the total mass or $>20\%$ of the total mass when the measured results are 20% of the applicable standard. Alternatively, there is no breakthrough requirement when the measured results are 10% of the applicable standard	Each test run	Invalidate test run

### *10.0 Calibration and Standardization*

*NOTE: Maintain a laboratory log of all calibrations.*

10.1 Probe Nozzle, Pitot Tube Assembly, Dry Gas Metering System, Probe Heater, Temperature Sensors, Leak-Check of Metering System, and Barometer. Same as Method 5, sections 10.1, 10.2, 10.3, 10.4, 10.5, 8.4.1, and 10.6, respectively.

10.2 High Performance Liquid Chromatograph. Establish the retention times for the isocyanates of interest; retention times will depend on the chromatographic conditions. The retention times provided in Table 10-1 are provided as a guide to relative retention times when using a C18, 250 mm x 4.6 mm ID, 5 $\mu$ m particle size column, a 2 ml/min flow rate of a 1:9 to



6:4 Acetonitrile/Ammonium Acetate Buffer, a 50 µl sample loop, and a UV detector set at 254 nm.

**Table 326-4—Example Retention Times**

<b>Retention Times</b>	
<b>Compound</b>	<b>Retention Time (minutes)</b>
MI	10.0
1,6-HDI	19.9
2,4-TDI	27.1
MDI	27.3

### 10.3 Preparation of Isocyanate Derivatives.

10.3.1 HDI, TDI, MDI. Dissolve 500 mg of each isocyanate in individual 100 ml aliquots of methylene chloride ( $\text{MeCl}_2$ ), except MDI which requires 250 ml of  $\text{MeCl}_2$ . Transfer a 5-ml aliquot of 1,2-PP (see section 7.3.8) to each solution, stir and allow to stand overnight at room temperature. Transfer 150 ml aliquots of hexane to each solution to precipitate the isocyanate-urea derivative. Using a Buchner funnel, vacuum filter the solid-isocyanate-urea derivative and rinse with 50 ml of hexane. Dissolve the precipitate in a minimum aliquot of  $\text{MeCl}_2$ . Repeat the hexane precipitation and filtration twice. After the third filtration, dry the crystals at 50°C and transfer to bottles for storage. The crystals are stable for at least 21 months when stored at room temperature in a closed container.

10.3.2 MI. Prepare a 200 µg/ml stock solution of methyl isocyanate-urea, transfer 60 mg of 1,2-PP to a 100-ml volumetric flask containing 50 ml of  $\text{MeCl}_2$ . Carefully transfer 20 mg of methyl isocyanate to the volumetric flask and shake for 2 minutes. Dilute the solution to volume with  $\text{MeCl}_2$  and transfer to a bottle for storage. Methyl isocyanate does not produce a solid derivative and standards must be prepared from this stock solution.

10.4 Preparation of calibration standards. Prepare a 100 µg/ml stock solution of the isocyanates of interest from the individual isocyanate-urea derivative as prepared in sections

10.3.1 and 10.3.2. This is accomplished by dissolving 1 mg of each isocyanate-urea derivative in 10 ml of Acetonitrile. Calibration standards are prepared from this stock solution by making appropriate dilutions of aliquots of the stock into Acetonitrile.

10.5 Preparation of Method Blanks. Prepare a method blank for each test program (up to twenty samples) by transferring 300 ml of the absorption solution to a 1,000-ml round bottom flask and concentrate as outlined in section 11.2.

10.6 Preparation of Field Spike Solution. Prepare a field spike solution for every test program in the same manner as calibration standards (see Section 10.4). The mass of the target isocyanate in the volume of the spike solution for the field spike train shall be equivalent to that estimated to be captured from the source concentration for each compound; alternatively, you may also prepare a solution that represents half the applicable standard.

10.7 HPLC Calibrations. See Section 11.1.

### *11.0 Analytical Procedure*

11.1 Analytical Calibration. Perform a multipoint calibration of the instrument at six or more upscale points over the desired quantitative range (multiple calibration ranges shall be calibrated, if necessary). The field samples analyzed must fall within at least one of the calibrated quantitative ranges and meet the performance criteria specified below. The lowest point in your calibration curve must be at least 5, and preferably 10, times the MDL. For each calibration curve, the value of the square of the linear correlation coefficient, *i.e.*,  $r^2$ , must be  $\geq 0.995$ , and the analyzer response must be within  $\pm 10$  percent of the reference value at each upscale calibration point. Calibrations must be performed on each day of the analysis, before analyzing any of the samples. Following calibration, a secondary standard shall be analyzed. A continual calibration verification (CCV) must also be performed prior to any sample and after

every ten samples. The measured value of this independently prepared standard must be within  $\pm 10$  percent of the expected value. Report the results for each calibration standard secondary standard, and CCV as well as the conditions of the HPLC. The reports should include at least the peak area, height, and retention time for each isocyanate compound measured as well as a chromatogram for each standard.

11.2 Concentration of Samples. Transfer each sample to a 1,000-ml round bottom flask. Attach the flask to a rotary evaporator and gently evaporate to dryness under vacuum in a 65 °C water bath. Rinse the round bottom flask three times each with 2 ml of acetonitrile and transfer the rinse to a 10-ml volumetric flask. Dilute the sample to volume with acetonitrile and transfer to a 15-ml vial and seal with a PTFE lined lid. Store the vial  $\leq 4$  °C until analysis.

11.3 Analysis. Analyze replicative samples by HPLC, using the appropriate conditions established in section 10.2. The width of the retention time window used to make identifications should be based upon measurements of actual retention time variations of standards over the course of a day. Three times the standard deviation of a retention time for a compound can be used to calculate a suggested window size; however, the experience of the analyst should weigh heavily in the interpretation of the chromatograms. If the peak area exceeds the linear range of the calibration curve, the sample must be diluted with acetonitrile and reanalyzed. Average the replicate results for each run. For each sample you must report the same information required for analytical calibrations (Section 11.1). For non-detect or values below the detection limit of the method, you shall report the value as “<” numerical detection limit.

### *12.0 Data Analysis and Calculations*

Nomenclature and calculations, same as in Method 5, section 6, with the following additions below.

## 12.1 Nomenclature.

AS = Response of the sample, area counts.

b = Y-intercept of the linear regression line, area counts.

BR = Percent Breakthrough

$C_A$  = Concentration of a specific isocyanate compound in the initial sample,  $\mu\text{g/ml}$ .

$C_B$  = Concentration of a specific isocyanate compound in the replicate sample,  $\mu\text{g/ml}$ .

$C_I$  = Concentration of a specific isocyanate compound in the sample,  $\mu\text{g/ml}$ .

$C_{\text{rec}}$  = Concentration recovered from spike train,  $\mu\text{g/ml}$ .

$C_S$  = Concentration of isocyanate compound in the stack gas,  $\mu\text{g/dscm}$

$C_T$  = Concentration of a specific isocyanate compound (Impingers 1-4),  $\mu\text{g/dscm}$

$C_{\text{spike}}$  = Concentration spiked,  $\mu\text{g/ml}$ .

$C_4$  = Concentration of a specific isocyanate compound (Impingers 14),  $\mu\text{g/dscm}$

$FI_m$  = Mass of Free Isocyanate

$FTS_{\text{rec}}$  = Field Train Spike Recovery

$I_m$  = Mass of the Isocyanate

$I_{\text{mw}}$  = MW of the Isocyanate

$IU_m$  = Mass of Isocyanate-urea derivative

$IU_{\text{mw}}$  = MW of the isocyanate-urea

M = Slope of the linear regression line, area counts-ml/ $\mu\text{g}$ .

$m_t$  = Mass of isocyanate in the total sample

MW = Molecular weight

RPD = Relative Percent Difference

VF = Final volume of concentrated sample, typically 10 ml.

$V_{m_{std}}$  = Volume of gas sample measured by the dry-gas meter, corrected to standard conditions, dscm (dscf).

12.2 Conversion from Isocyanate to the Isocyanate-urea derivative. The equation for converting the amount of free isocyanate to the corresponding amount of isocyanate-urea derivative is as follows:

$$IU_m = I_m \frac{IU_{mw}}{I_{mw}} \quad \text{Eq. 326-1}$$

The equation for converting the amount of IU derivative to the corresponding amount of  $FI_m$  is as follows:

$$I_m = IU_m \frac{I_{mw}}{IU_{mw}} \quad \text{Eq. 326-2}$$

12.3 Calculate the correlation coefficient, slope, and intercepts for the calibration data using the least squares method for linear regression. Concentrations are expressed as the x-variable and response is expressed as the y-variable.

12.4 Calculate the concentration of isocyanate in the sample:

$$C_I = \frac{As - b}{M} \quad \text{Eq. 326-3}$$

12.5 Calculate the total amount collected in the sample by multiplying the concentration ( $\mu\text{g/ml}$ ) times the final volume of acetonitrile (10 ml).

$$m_I = C_I \times V_f \quad \text{Eq. 326-4}$$

12.6 Calculate the concentration of isocyanate ( $\mu\text{g/dscm}$ ) in the stack gas.

$$C_s = \frac{M_I}{V_{m_{std}}} K \quad \text{Eq. 326-5}$$

12.7 Calculate Relative Percent Difference (RPD) for each replicative sample

$$\%RPD = \left| \frac{(C_A - C_B)}{(C_A + C_B)/2} \right| \times 100 \quad \text{Eq. 326-6}$$

12.8 Calculate Field Train Spike Recovery

$$FTS_{rec} = \left[ \frac{C_{rec}}{C_{spike}} \right] \times 100 \quad \text{Eq. 326-7}$$

12.9 Calculate Percent Breakthrough

$$BR = \left[ \frac{C_4}{C_T} \right] \times 100 \quad \text{Eq. 326-8}$$

Where:  $K = 35.314 \text{ ft}^3/\text{m}^3$  if  $Vm(\text{std})$  is expressed in English units.  $= 1.00 \text{ m}^3/\text{m}^3$  if  $Vm(\text{std})$  is expressed in metric units.

### *13.0 Method Performance*

Evaluation of sampling and analytical procedures for a selected series of compounds must meet the quality control criteria (See Section 9) for each associated analytical determination. The sampling and analytical procedures must be challenged by the test compounds spiked at appropriate levels and carried through the procedures.

### *14.0 Pollution Prevention [Reserved]*

### *15.0 Waste Management [Reserved]*

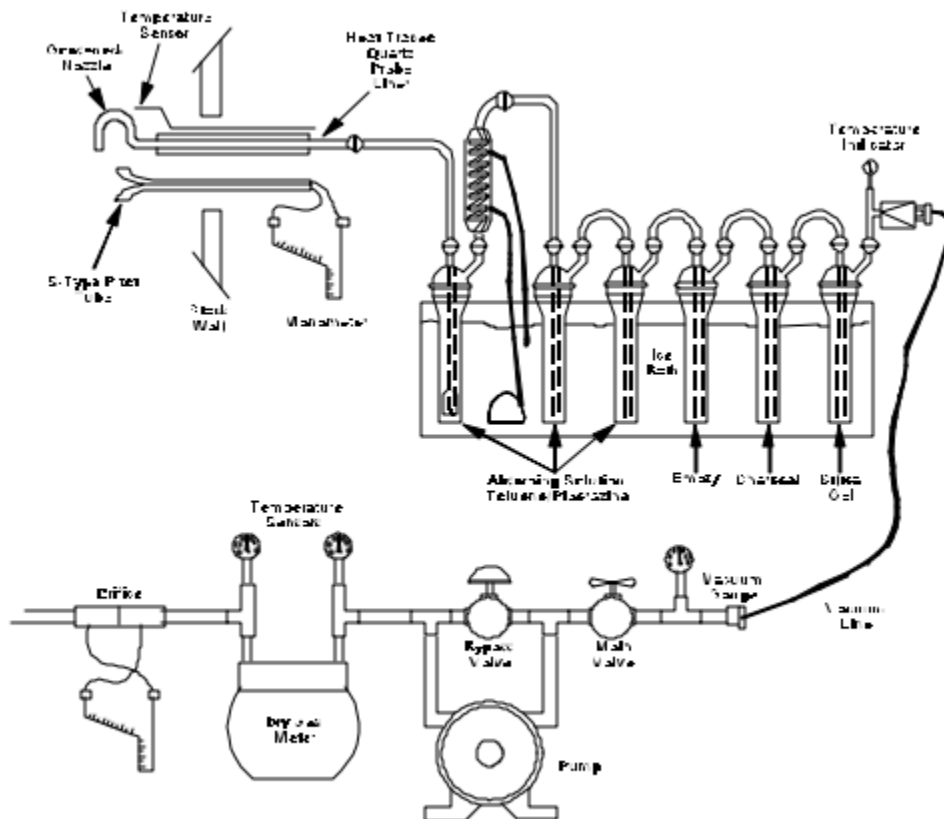
### *16.0 Alternative Procedures [Reserved]*

### *17.0 References*

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### 18.0 Diagrams



**Figure 326-1—Method 326 Sampling Train**